

**SAMSUNG**

# GSM TELEPHONE

## SGH-E790

# ***SERVICE*** *Manual*

### GSM TELEPHONE



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## 10. Product Function

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# 1. Specification

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## 1-1. GSM General Specification

		EGSM900	DCS1800	PCS1900
Freq. Band[MHz] Uplink/Downlink		880~915 925~960	1710~1785 1805~1880	1850~1910 1930~1990
ARFCN range		0~124& 975~1023	512~885	512~810
Tx/Rx spacing		45 MHz	95 MHz	80 MHz
Mod. Bit rate/ Bit Period	GPRS	270.833 Kbps 3.692 us	270.833 Kbps 3.692 us	270.833 Kbps 3.692 us
	EDGE	812.5 Kbps 3.692 us	812.5 Kbps 3.692 us	812.5 Kbps 3.692 us
Time Slot Period/Frame Period		576.9 us 4.615 ms	576.9 us 4.615 ms	576.9 us 4.615 ms
Modulation	GPRS	0.3 GMSK	0.3 GMSK	0.3 GMSK
	EDGE	8 PSK	8 PSK	8 PSK
MS Power	GPRS	33 dBm~5 dBm	30 dBm~0 dBm	30 dBm~0 dBm
	EDGE	27~5 dBm	26~0 dBm	26~0 dBm
Power Level	GPRS	5~19(class4)	0~15(class1)	0~15(class1)
	EDGE	8~19(class E2)	2~15(class E2)	2~15(class E2)
Sensitivity		-102 dBm	-100 dBm	-102 dBm
TDMA Mux		8	8	8
Cell Radius		35 Km	2 Km	2 Km

## 1-2. GSM TX power class

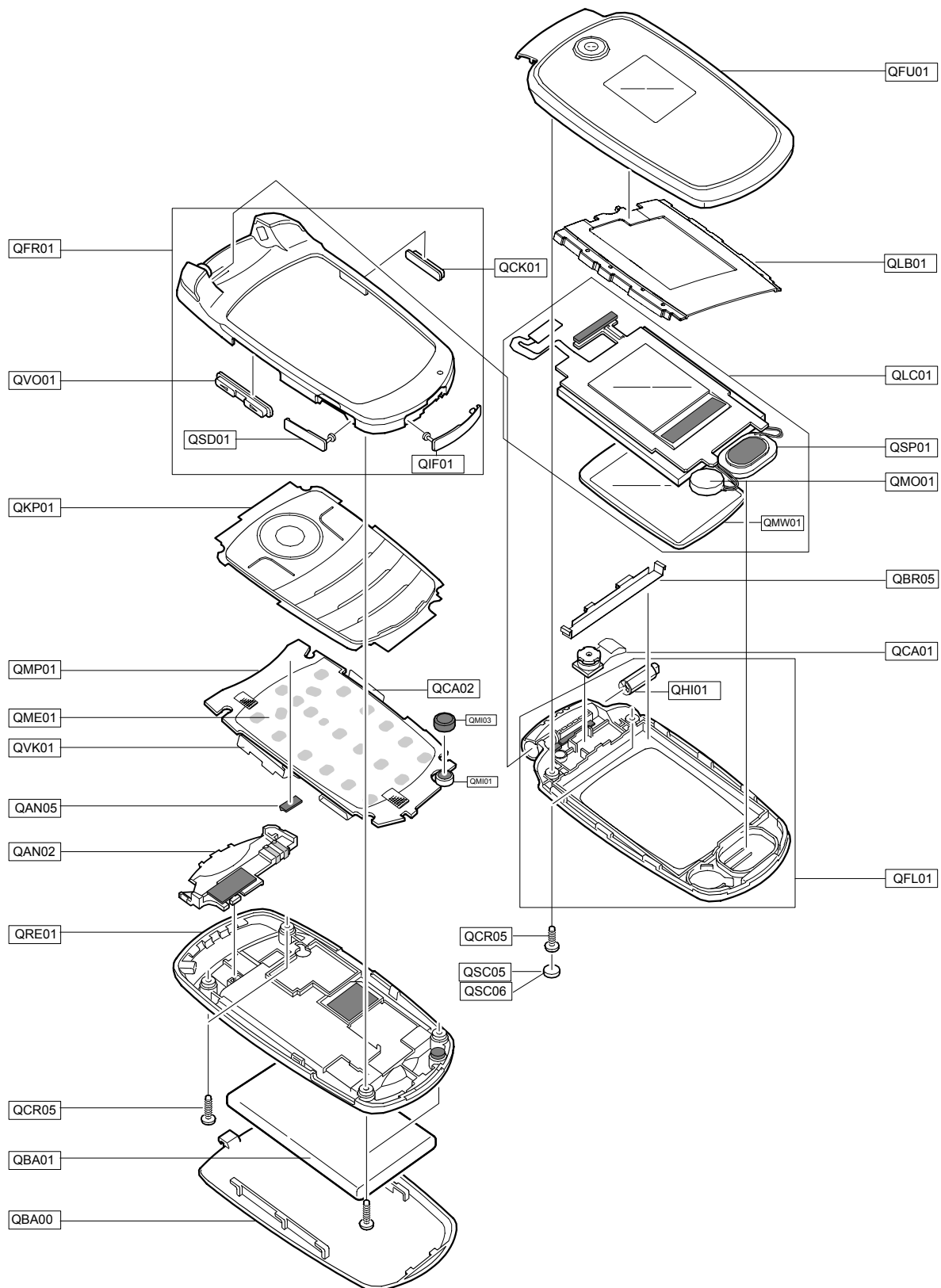
<b>TX Power control level</b>	<b>EGSM900</b>	<b>TX Power control level</b>	<b>DCS1800</b>	<b>TX Power control level</b>	<b>PCS1900</b>
5	33±2 dBm	0	30±3 dBm	0	30±3 dBm
6	31±2 dBm	1	28±3 dBm	1	28±3 dBm
7	29±2 dBm	2	26±3 dBm	2	26±3 dBm
8	27±2 dBm	3	24±3 dBm	3	24±3 dBm
9	25±2 dBm	4	22±3 dBm	4	22±3 dBm
10	23±2 dBm	5	20±3 dBm	5	20±3 dBm
11	21±2 dBm	6	18±3 dBm	6	18±3 dBm
12	19±2 dBm	7	16±3 dBm	7	16±3 dBm
13	17±2 dBm	8	14±3 dBm	8	14±3 dBm
14	15±2 dBm	9	12±4 dBm	9	12±4 dBm
15	13±2 dBm	10	10±4 dBm	10	10±4 dBm
16	11±2 dBm	11	8±4 dBm	11	8±4 dBm
17	9±2 dBm	12	6±4 dBm	12	6±4 dBm
18	7±2 dBm	13	4±4 dBm	13	4±4 dBm
19	5±2 dBm	14	2±5 dBm	14	2±5 dBm
		15	0±5 dBm	15	0±5 dBm

### 1-3. EDGE TX Power Level

TX Power control level	EGSM900	TX Power control level	DCS1800	TX Power control level	PCS1900
8	27±3 dBm			2	26±3 dBm
9	25±3 dBm	2	26±3 dBm	3	24±3 dBm
10	23±3 dBm	3	24±3dBm	4	22±3 dBm
11	21±3 dBm	4	22±3dBm	5	20±3 dBm
12	19±3 dBm	5	20±3dBm	6	18±3 dBm
13	17±3 dBm	6	18±3dBm	7	16±3 dBm
14	15±3 dBm	7	16±3dBm	8	14±3 dBm
15	13±3 dBm	8	14±3dBm	9	12±4 dBm
16	11±5 dBm	9	12±4dBm	10	10±4 dBm
17	9±5 dBm	10	10±4dBm	11	8±4 dBm
18	7±5 dBm	11	8±4dBm	12	6±4 dBm
19	5±5 dBm	12	6±4dBm	13	4±4 dBm
		13	4±4dBm	14	2±5 dBm
		14	2±5dBm	15	0±5 dBm
		15	0±5dBm		

## 2. Exploded View and Parts List

### 2-1. Cellular phone Exploded View



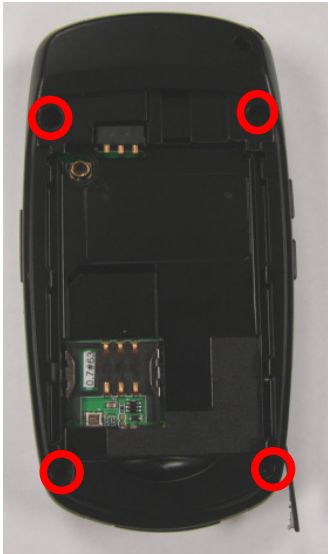
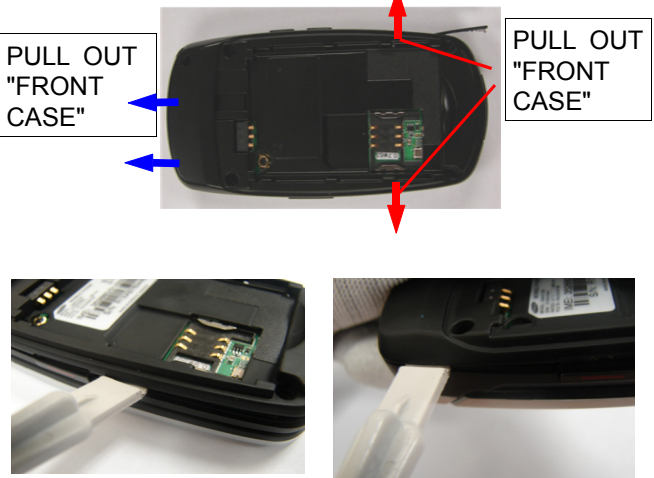
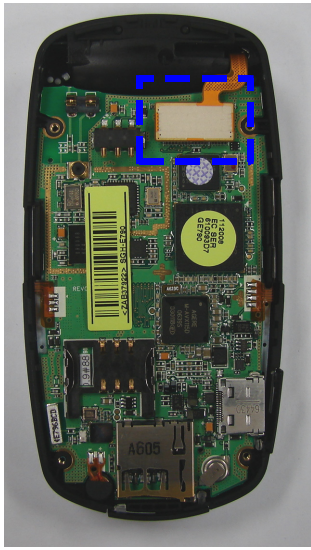

## 2-2. Cellular phone Parts list

Design LOC		Discription	SEC CODE
QAN02		INTENNA-SGHE790	GH42-00981A
QAN05		ASSY MEC-INTENNA CONTACT	GH75-08168A
QBA00		PMO-COVER BATT	GH72-34003A
QBA01		INNER BATTERY PACK-800MAH,BLK,	GH43-02644A
QCA01		UNIT-CAMERA	GH59-03723A
QCA02		UNIT-CAMERA KEY FPCB	GH59-03666A
QCK01		PMO-SIDE KEY CAMERA	GH72-34006A
QCR05		SCREW-MACHINE	6001-001478
QCR05		SCREW-MACHINE	6001-001478
QKP01		ASSY KEYPAD-MAIN(SER/OS)	GH98-03264A
QME01		UNIT-DOMESHEET	GH59-03664A
QMI01		MICROPHONE-ASSY-5.25MM	GH30-00178C
QMI03		RMO-RUBBER MIC	GH73-07953A
QMO01		MOTOR DC-SGHZ130	GH31-00154C
QMP01		PBA MAIN-SGHE790 (PBA MAIN)	GH92-02977A
QRE01		ASSY CASE-REAR	GH98-02157A
QSC05		RMO-RUBBER F/L SCREW L	GH73-07951A
QSC06		RMO-RUBBER F/L SCREW R	GH73-07952A
QSP01		SPEAKER	3001-002052
QVK01		UNIT-VOLUME KEY FPCB	GH59-03645A
QVO01		PMO-SIDE KEY VOLUME	GH72-34007A
QLC01		ELA UNIT-SGHE790 LCD MODULE	GH96-02272A
	QMW01	ASSY COVER-MAIN WINDOW	GH98-02256A
QFU01		ASSY CASE-FOLDER UPPER	GH98-02156A
	QLB01	ASSY BRACKET-LCD	GH98-02159A
QFL01		ASSY CASE-FOLDER LOWER	GH98-02155A
	QHI01	ASSY MEC-HINGE(CAN TYPE)	GH75-04662A
	QBR05	ASSY CASE-BRACKET LOWER	GH98-03619A
QFR01		ASSY CASE-FRONT	GH98-02154A
	QIF01	PMO-COVER IF EARJACK	GH72-34004A
	QSD01	PMO-COVER MICRO SD	GH72-34005A



Discription	SEC CODE
BAG PE	6902-000297
CBF INTERFACE-DATA LINK CABLE	GH39-00444B
ADAPTOR-SGHE690,SIL,EU,A_TYPE	GH44-01361B
S/W CD-SGHE790 PC STUDIO 3.1	GH46-00366A
UNIT-EARPHONE,SGHZ370,SIL,A-TY	GH59-03679B
LABEL(P)-WATER SOAK	GH68-02026A
LABEL(P)-WATER SOAK	GH68-02026A
MANUAL-SFC	GH68-04336A
LABEL(P)-BARCODE RUSSIA	GH68-08494A
MANUAL USERS-EU RUSSIAN	GH68-13125A
LABEL(R)-MAIN(SER)	GH68-13217B
BOX(P)-UNIT MAIN(SER)	GH69-04786B
CUSHION-CASE TA2 MA2	GH69-04787A
MPR-REMOVE TAPE LCD	GH74-13804A
MPR-TAPE LED	GH74-17926A
MPR-TAPE MAIN LDI	GH74-19992A
MPR-GASK TAPE	GH74-21836A
MPR-VINYL BOHO MAIN WINDOW	GH74-22341A
MPR-VINYL BOHO F/L A	GH74-26477A
MPR-VINYL BOHO F/U C	GH74-26478A
MPR-TAPE	GH74-27509A
MPR-GASK TAPE	GH74-27520A
MPR-INSU TAPE LCD TOP	GH74-27523A
MPR-TAPE FRONT NET	GH74-27542A
MPR-INSU TAPE	GH74-27955A
MPR-INSU TAPE	GH74-27956A
MPR-INSU TAPE	GH74-28242A
MPR-SPONGE	GH74-29421A
MPR-INSU TAPE LED A	GH74-29821A

## 2-3. Disassembly

<div data-bbox="168 281 201 317" data-label="Text">1</div> 	<div data-bbox="824 281 857 317" data-label="Text">2</div> 
<p>1) Unscrew the REAR at the four points.</p> <p>2) Disassemble the IF COVER</p> <p>※ <b>caution</b></p> <p>1) Be careful not to make scratch and molding damage!</p>	<p>1) Disassemble the Rear from the bottom side to the upper side.</p> <p>※ <b>caution</b></p> <p>1) Be careful not to make scratch and molding damage!</p>
<div data-bbox="168 1066 201 1102" data-label="Text">3</div> 	<div data-bbox="824 1066 857 1102" data-label="Text">4</div> 
<p>1) Disassemble the LCD CONNECTOR</p> <p>2) Disassemble the PBA from the FRONT ASS'Y</p> <p>3) Remove the DUST TAPE</p> <p>4) Disassemble the Keypad.</p> <p>※ <b>caution</b></p> <p>1) When PBA is separated from LCD Connector, Be careful not to damage!</p> <p>2) Be careful not to damage LCD FPCB!</p>	<p>1) Push the hinge between Folder Upper and lower, And Disassemble Front from Folder.</p> <p>※ <b>caution</b></p> <p>1) Be careful not to make scratch and molding damage!</p> <p>2) Be careful not to damage LCD FPCB!</p>

5



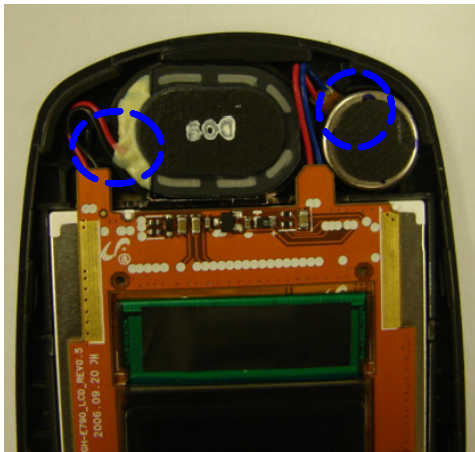
- 1) Remove screw caps.
  - 2) Unscrew the FOLDER Upper.
- ※ **caution**
- 1) Be careful not to make scratch and molding damage!

6



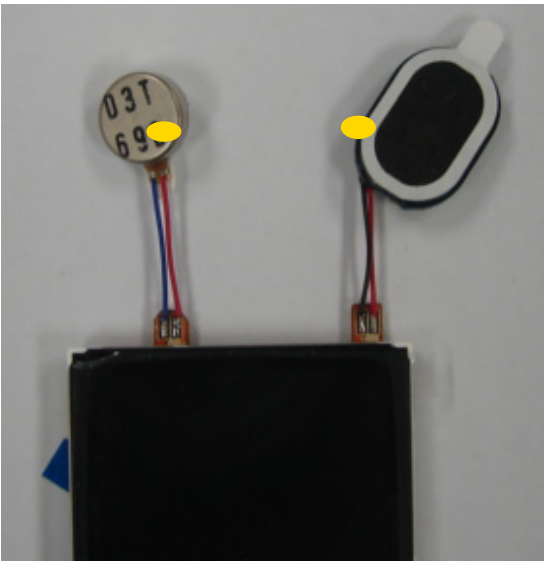
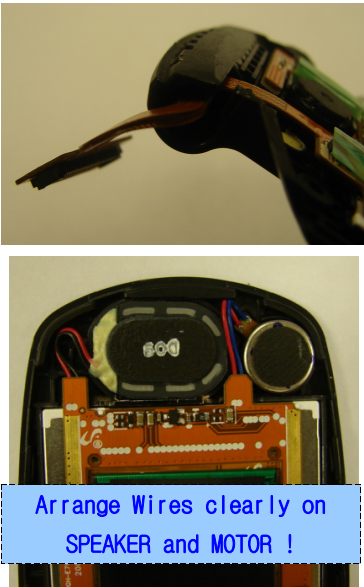


- 1) By using an assembly stick, Disassemble Folder Upper from Folder lower (Right and Left are the same process)
- ※ **caution**
- 1) Be careful not to make scratch and molding damage!
  - 2) Be careful not to damage LCD FPCB!

7

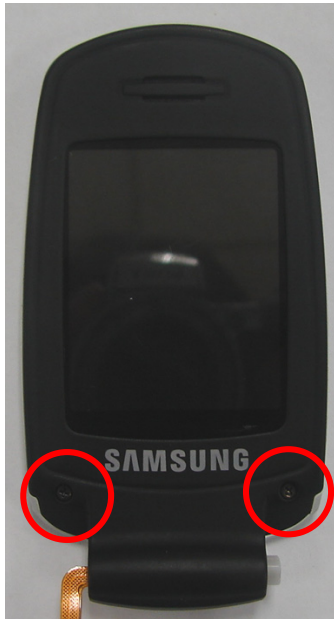


- 1) Disassemble the MOTOR and the SPEAKER from FOLDER LOWER by using a pincette.
- ※ **caution**
- 1) Be careful not to make scratch and molding damage!
  - 2) Do not use the speaker bonding part at disassembling speaker (Only use marking point)

## 2-4. Assembly

<div data-bbox="147 266 215 321" data-label="Text">1</div> 	<div data-bbox="808 266 876 321" data-label="Text">2</div>  <div data-bbox="930 762 1291 842" data-label="Text"> <p>Arrange Wires clearly on SPEAKER and MOTOR !</p> </div>
<p>1) Solder SPEAKER &amp; MOTOR to LCD. 2) Bond on the soldering place</p> <p>※ <b>caution</b></p> <p>1) Be careful not to make scratch and molding damage!</p>	<p>1) Insert FPCB into FOLDER LOWER. 2) Attach Speaker and Motor.</p> <p>※ <b>caution</b></p> <p>1) Be careful not to make scratch and molding damage! 2) Be careful not to damage LCD FPCB!</p>
<div data-bbox="147 1060 215 1115" data-label="Text">3</div> 	<div data-bbox="808 1060 876 1115" data-label="Text">4</div> 
<p>1) Assemble FOLDER UPPER with FOLDER LOWER following the orders as above picture is shown.</p> <p>※ <b>caution</b></p> <p>1) Be careful not to make scratch and molding damage!</p>	<p>1) Screw up the FOLDER UPPER at the above two points.(M1.4xL3)</p> <p>※ <b>caution</b></p> <p>1) Be careful not to make scratch and molding damage! 2) Torque <b>1.1 ~ 1.3 kgf.cm</b></p>

5



- 1) Attach Screw rubber caps on the screws by using a pincette.

※ **caution**

- 1) Be careful not to make scratch and molding damage!
- 2) Be sure to push the rubbers.

6



- 1) Insert LCD FPCB[which is connected to FOLDER] into the bottom of FRONT Hinge.
- 2) The FOLDER's projection inserts the FRONT'S hole when Projection is pushed
- 3) Assemble FOLDER with FRONT

※ **caution**

- 1) Be careful not to make scratch and molding damage!

7



- 1) Insert the KEYPAD.

※ **caution**

- 1) Be careful not to insert keypad into FRONT incorrectly![Put KEYPAD Holes into FRONT Projection correctly!]
- 2) Be careful not to damage LCD FPCB!

8



**Attach FRONT Dust  
TAPE**

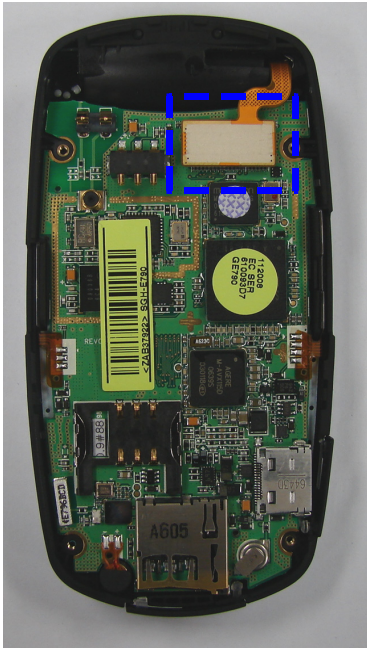
- 1) Attach FRONT Dust TAPE as a above picture is shown.

※ **caution**

- 1) Be careful not to make scratch and molding damage!



9



- 1) Insert PBA into FRONT.
  - 2) Connect LCD FPCB to PBA CONNECTOR.
- ※ **caution**
- 1) Be careful not to damage LCD FPCB!
  - 2) Be careful not to damage PBA

11



- 1) Assemble the rear from 1 direction to 2 direction as the above picture is shown.
- ※ **caution**
- 1) Be careful not to make scratch and molding damage!

10

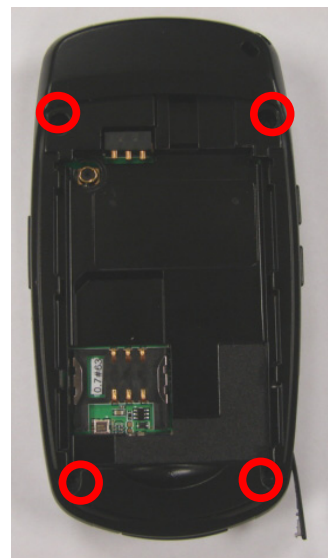


Be sure the direction.



- 1) Insult the Side key and Camera key as the above picture is shown.
- ※ **caution**
- 1) Be sure the direction of side key

12

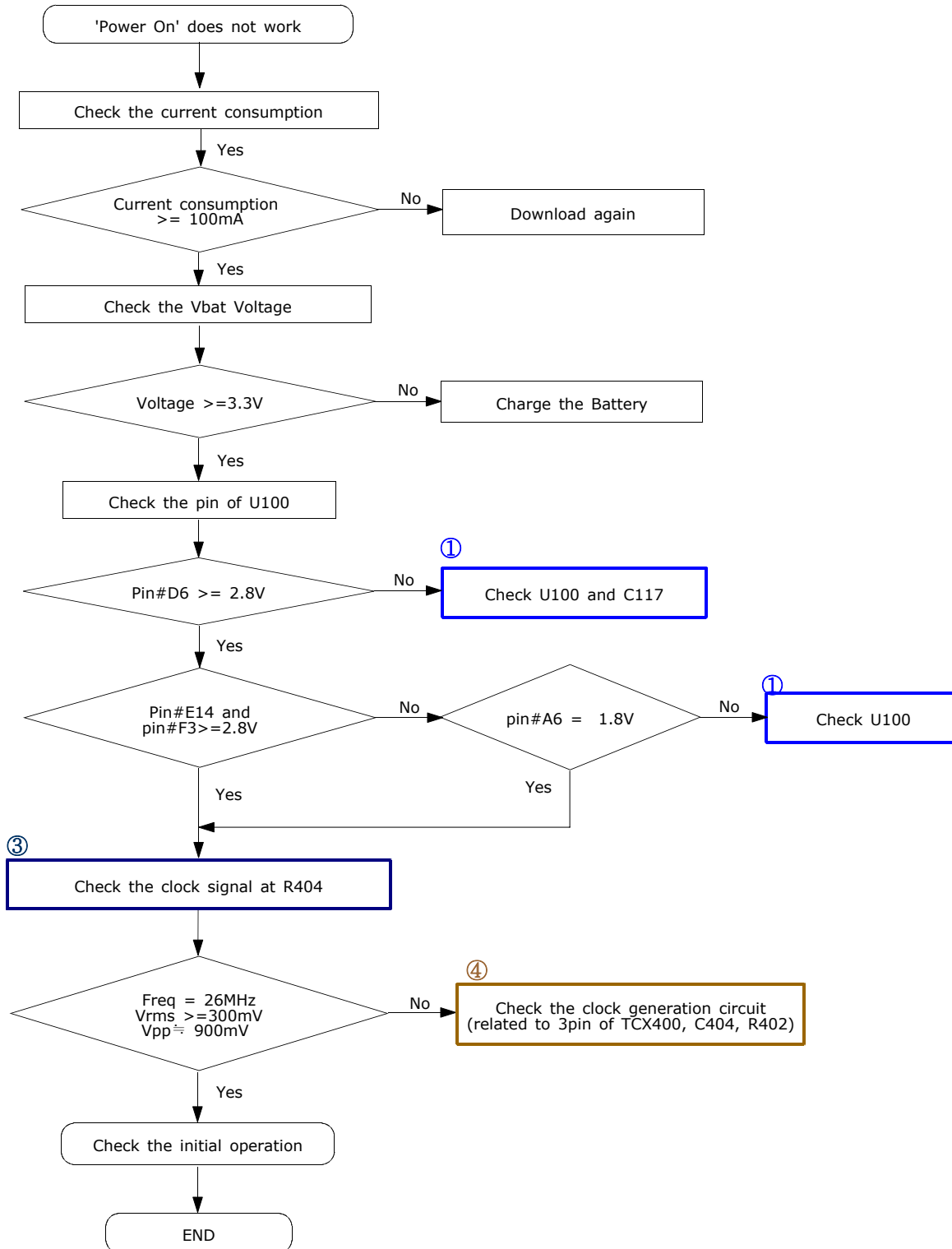


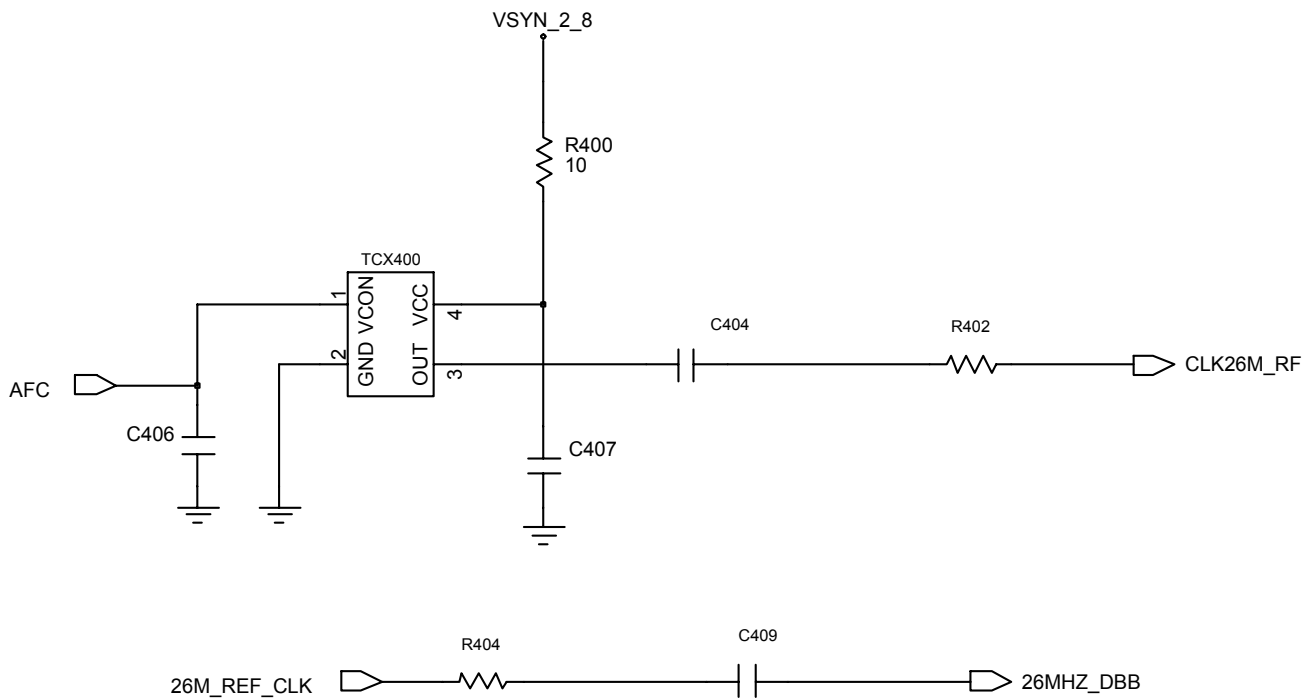
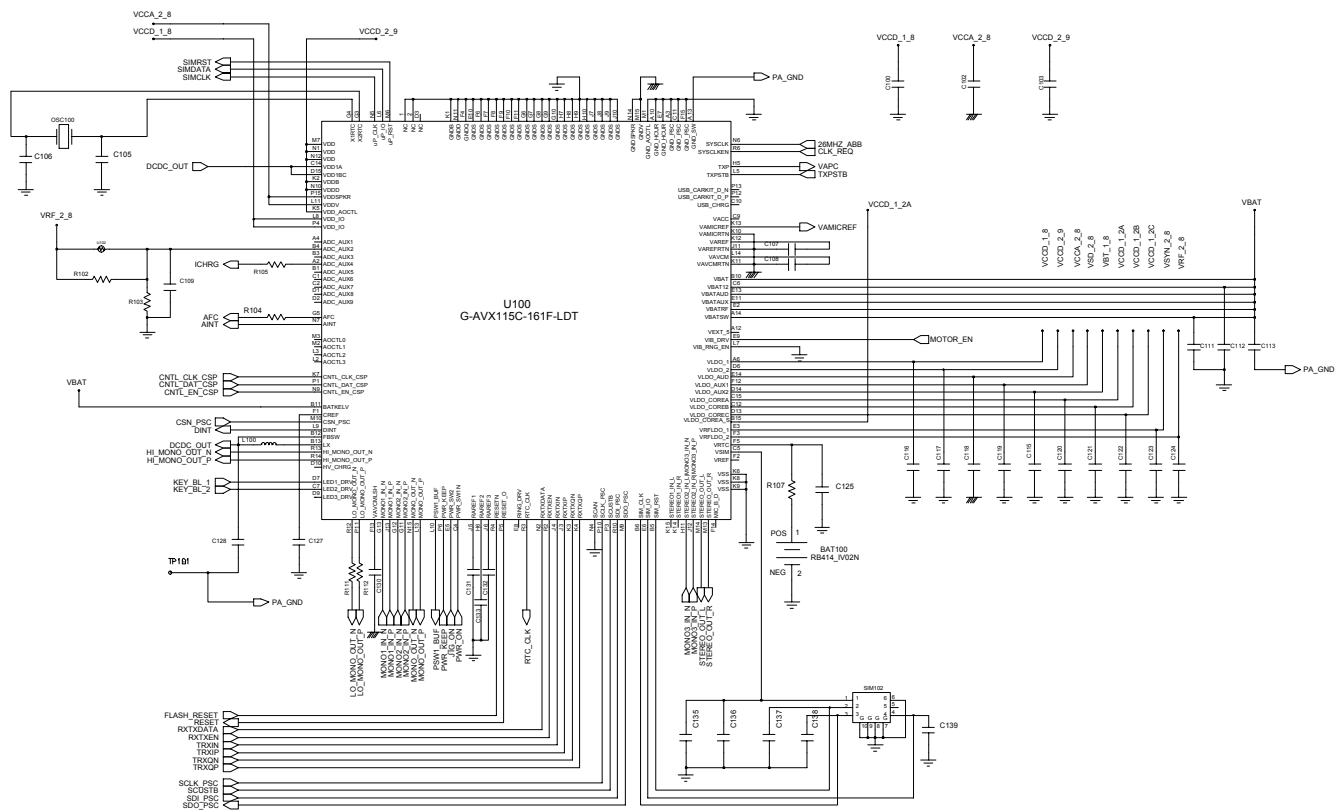
- 1) Screw up the REAR at 4 Points.  
[M1.4\* L3]
- ※ **caution**
- 1) Torque  $0.8 \pm 0.1 \text{ Kg/cm}^2$
  - 2) Be careful not to make scratch and molding damage!

## 3. Flow Chart of Troubleshooting

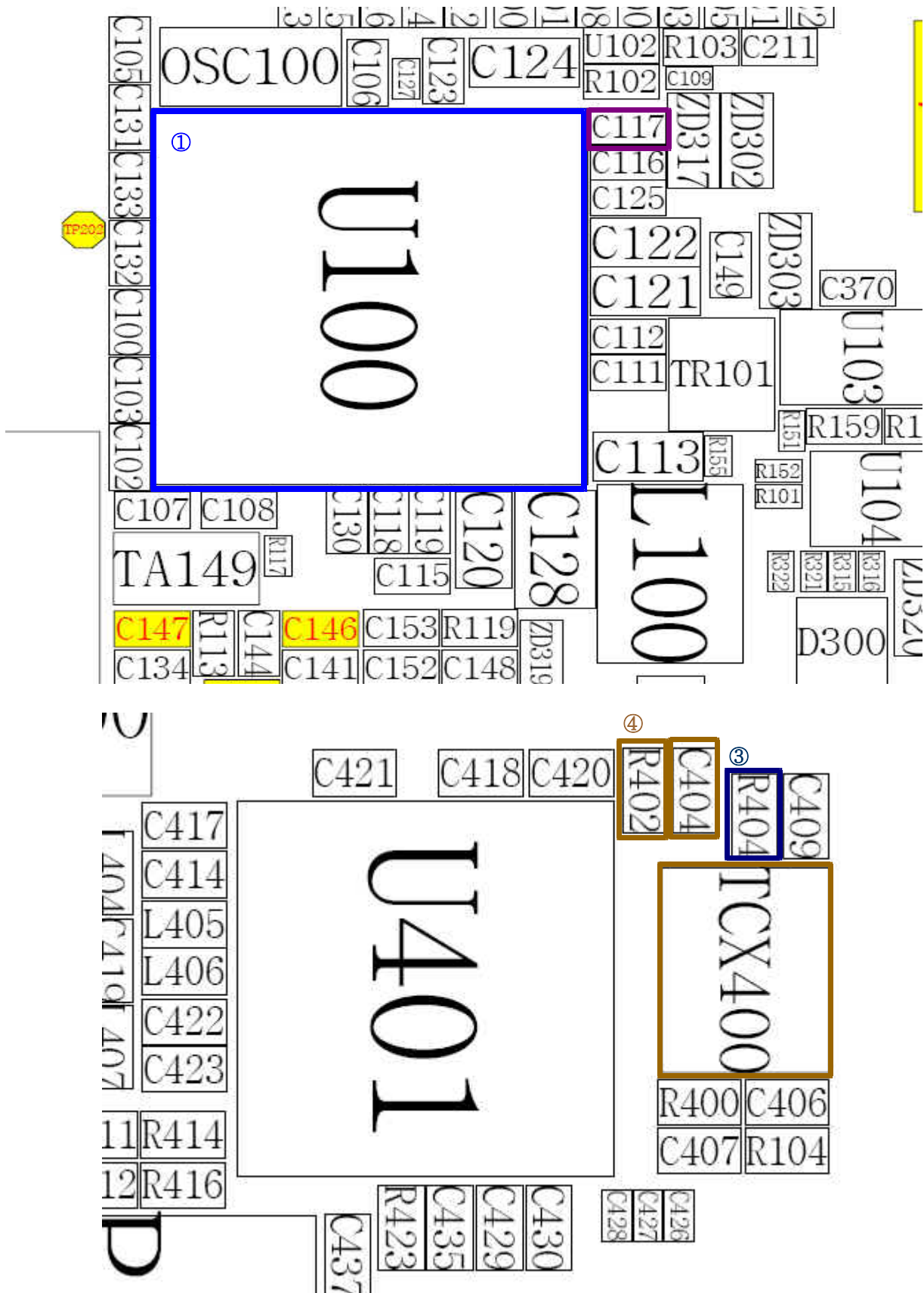
### 3-1.Baseband

#### 3-1-1. Power ON

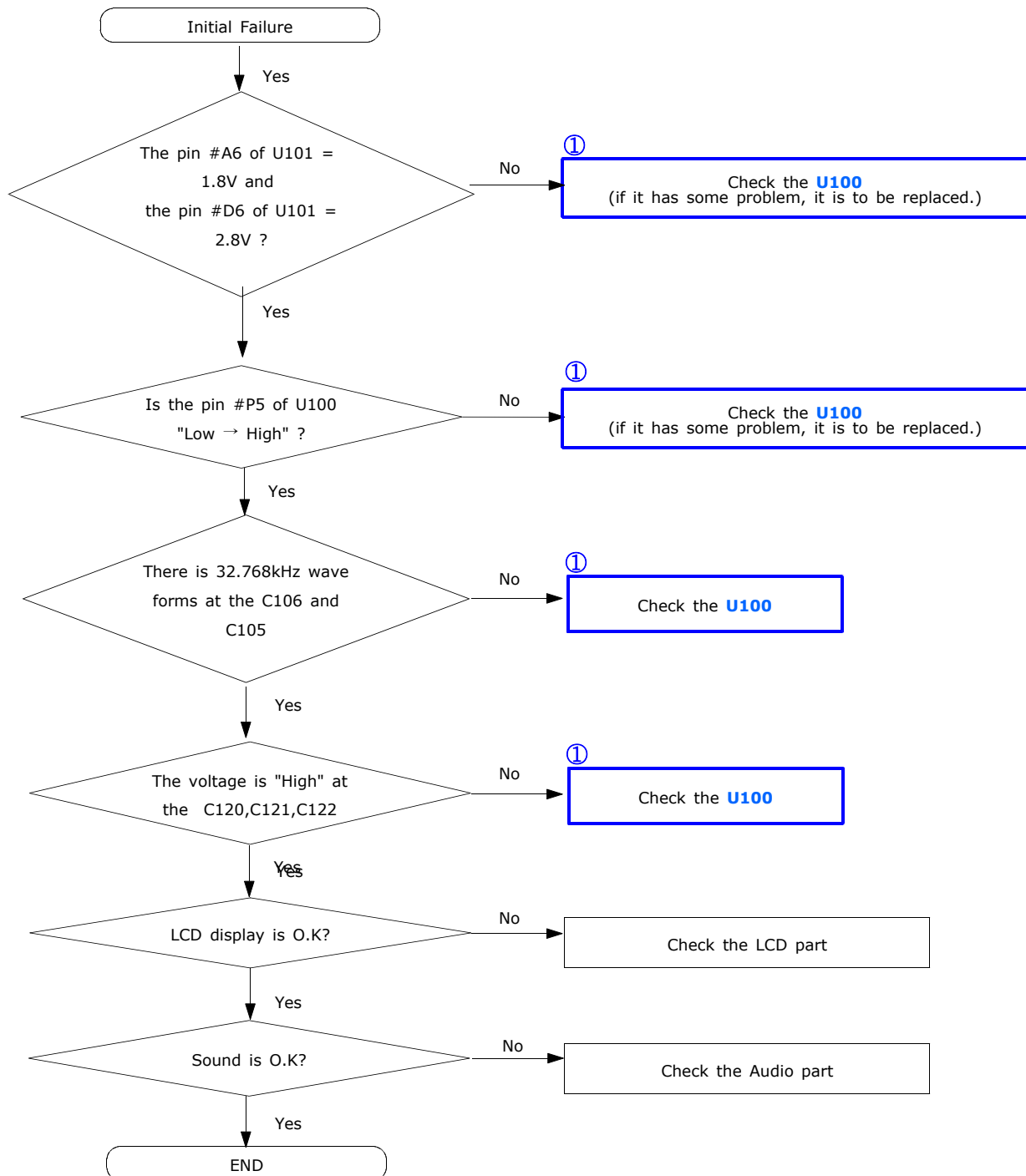






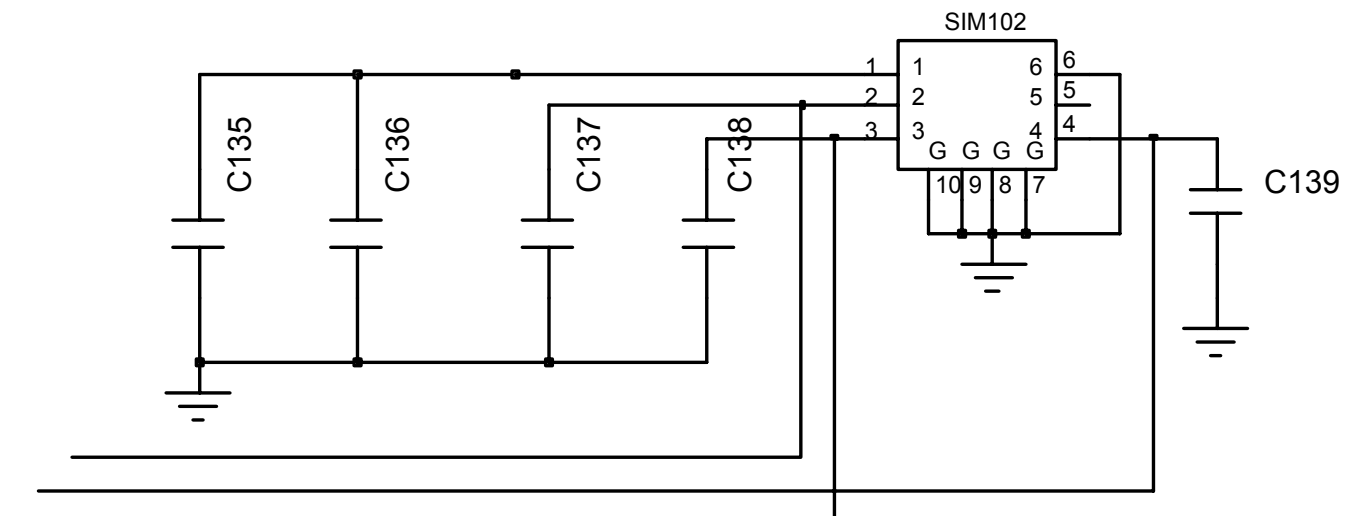
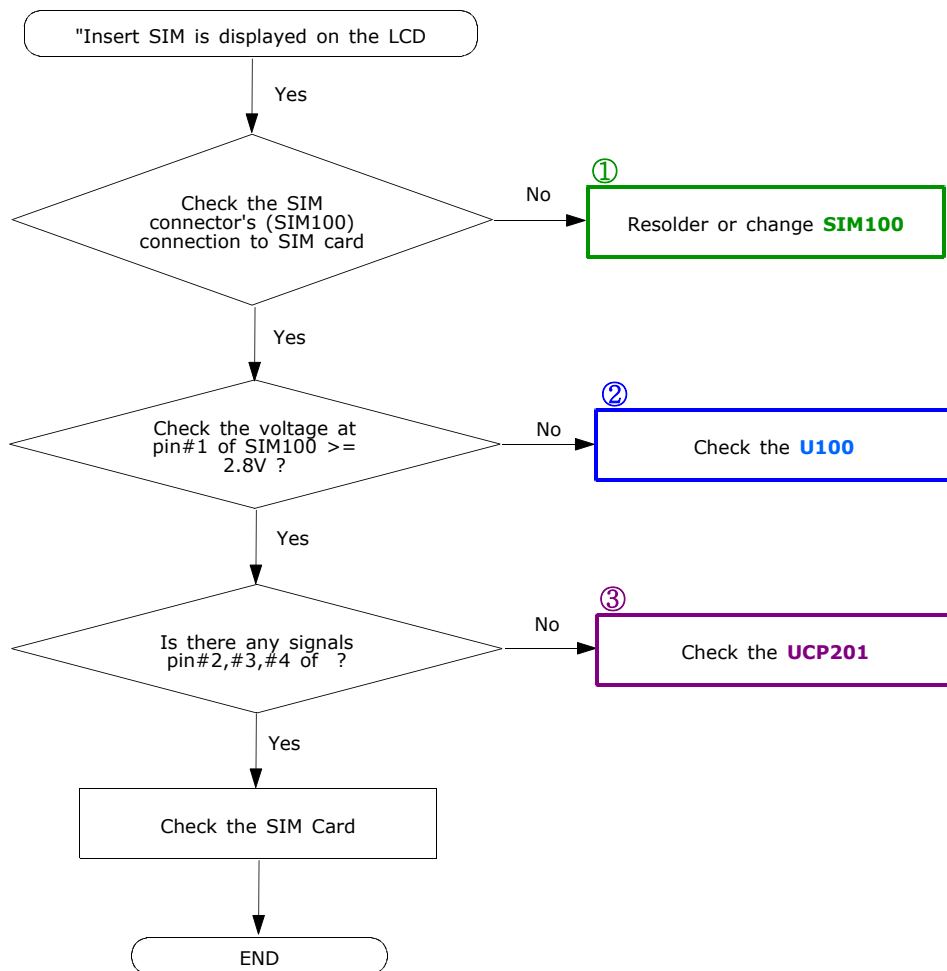


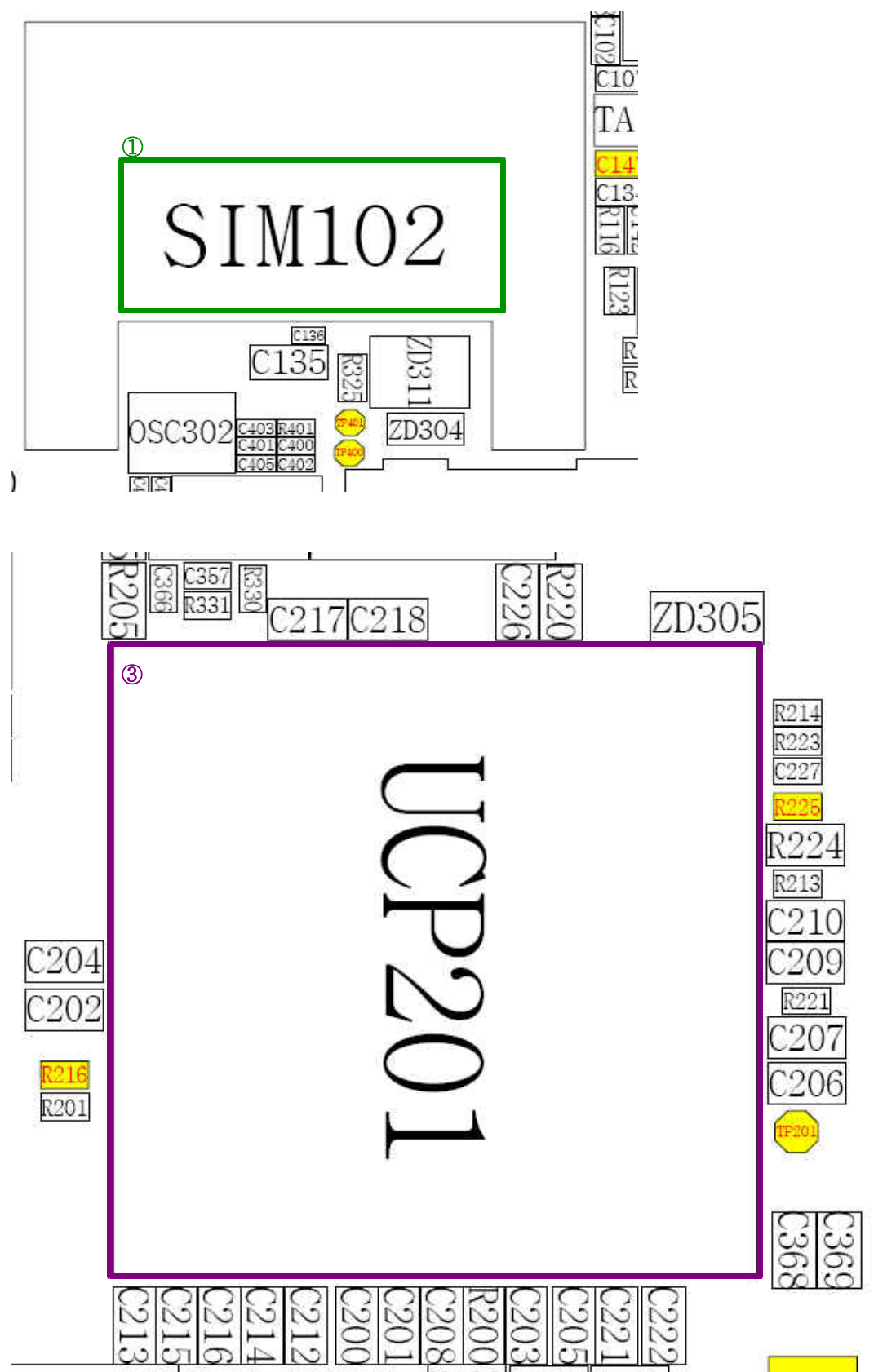
### 3-1-2. Initial



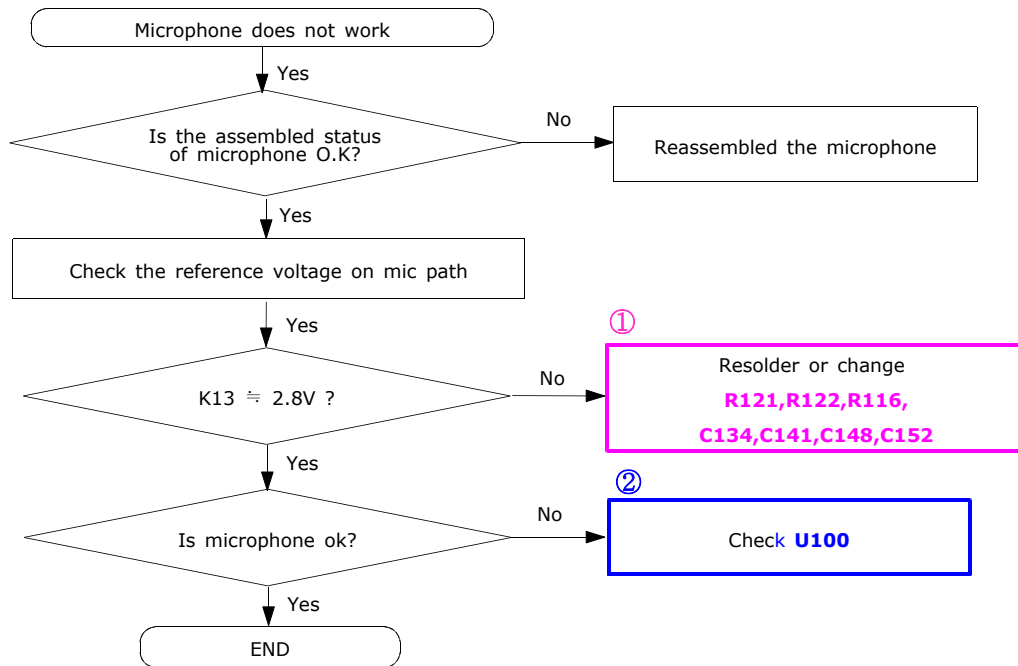


### 3-1-3. Sim Part



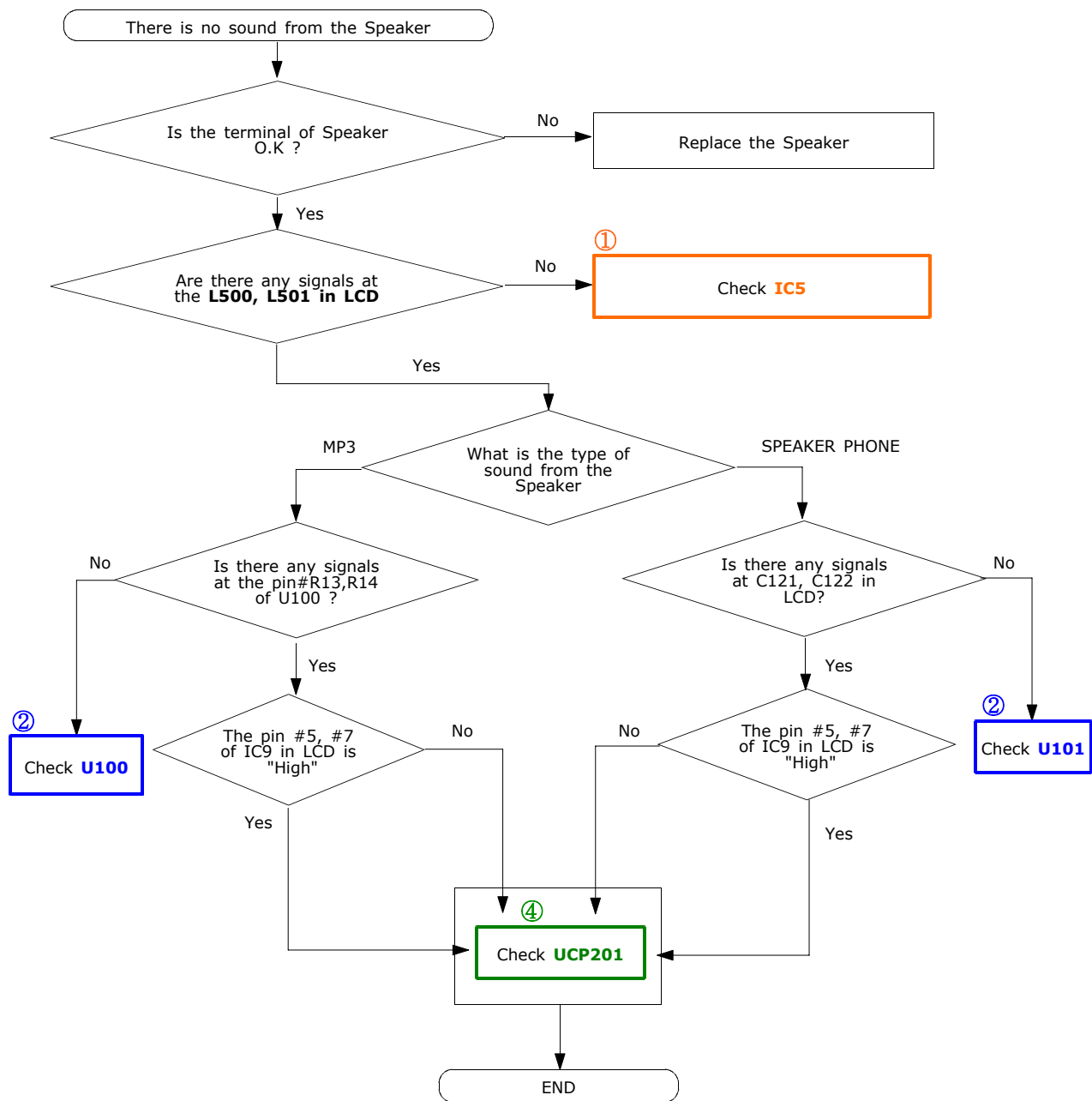


### 3-1-4. Microphone Part

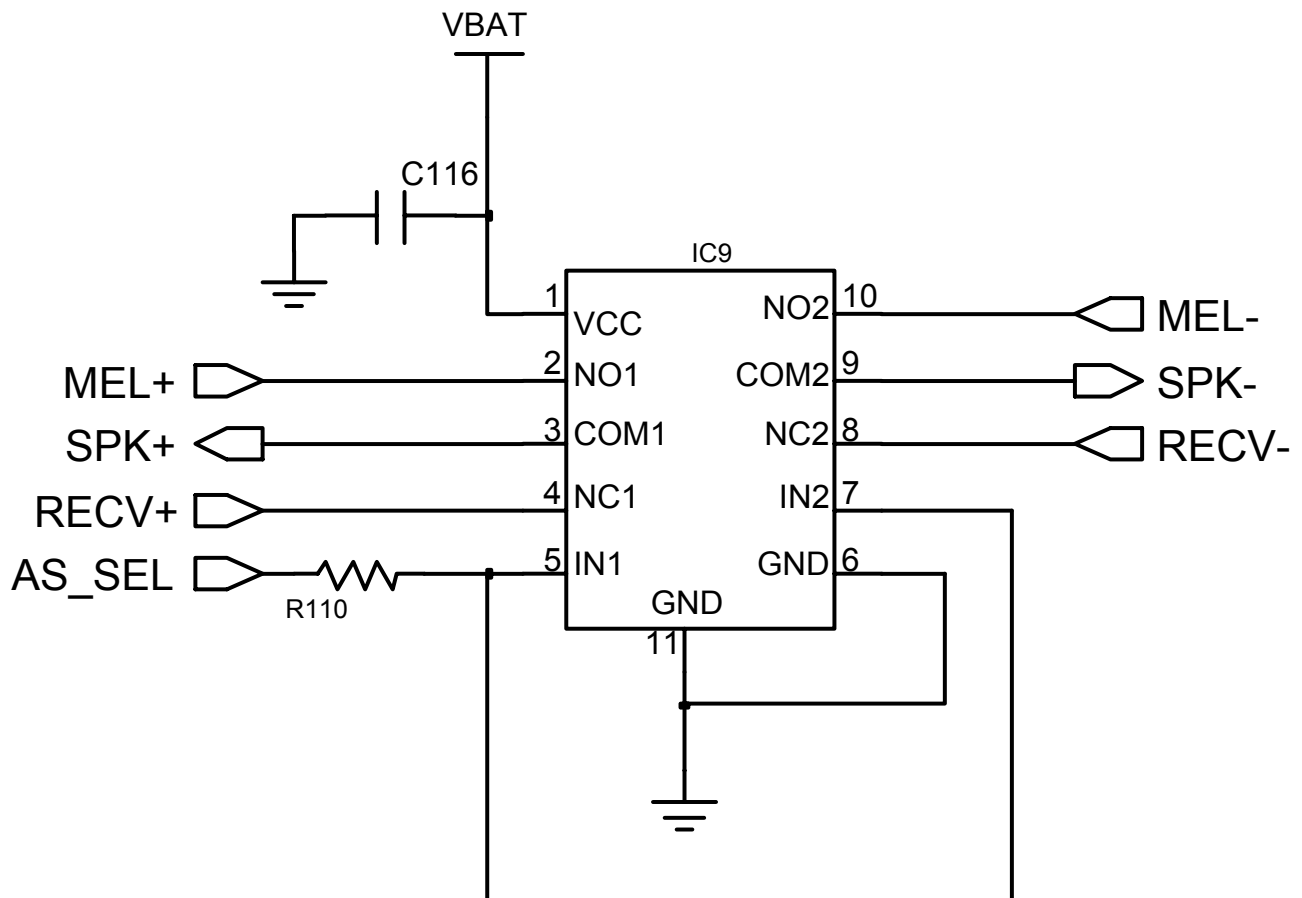
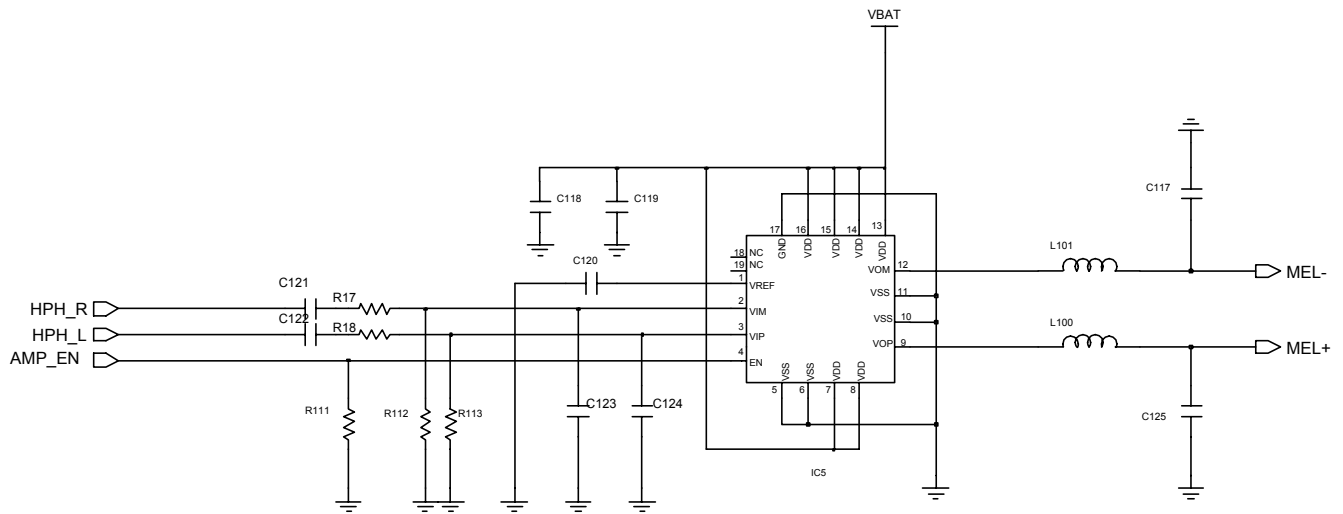


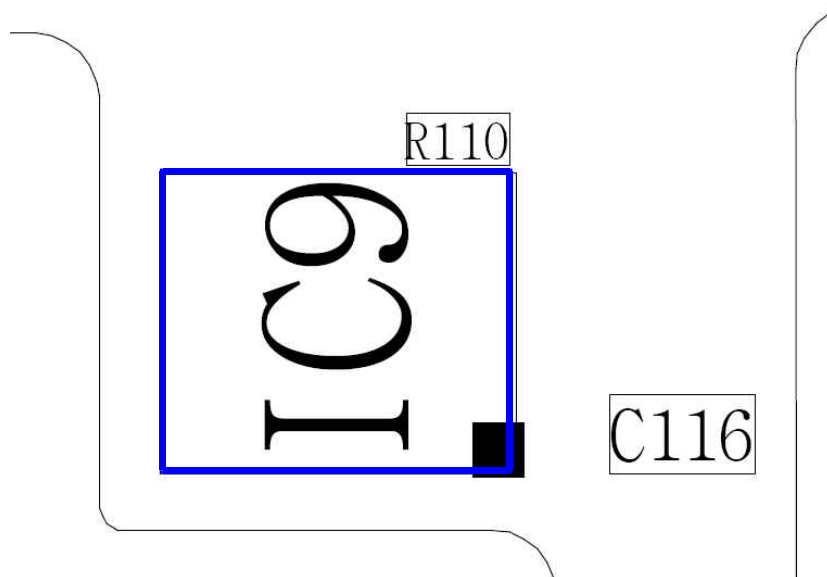
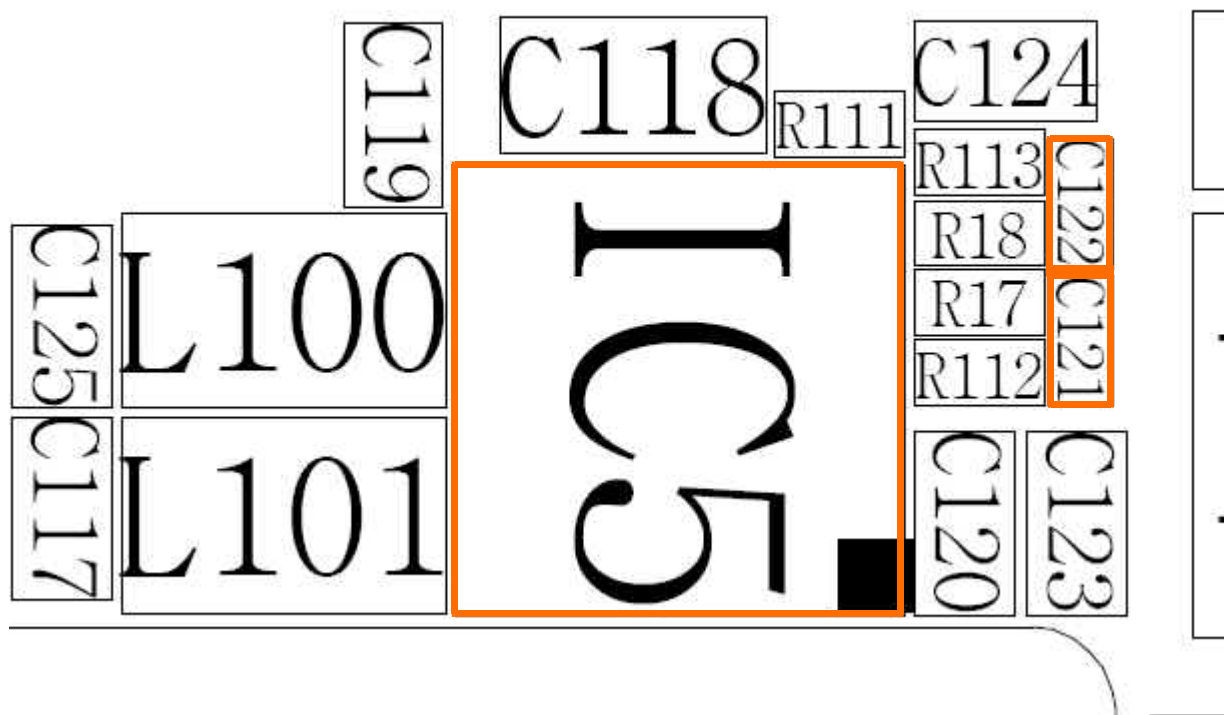


### 3-1-5. Speaker Part\_1(MP3, SPEAKER PHONE)

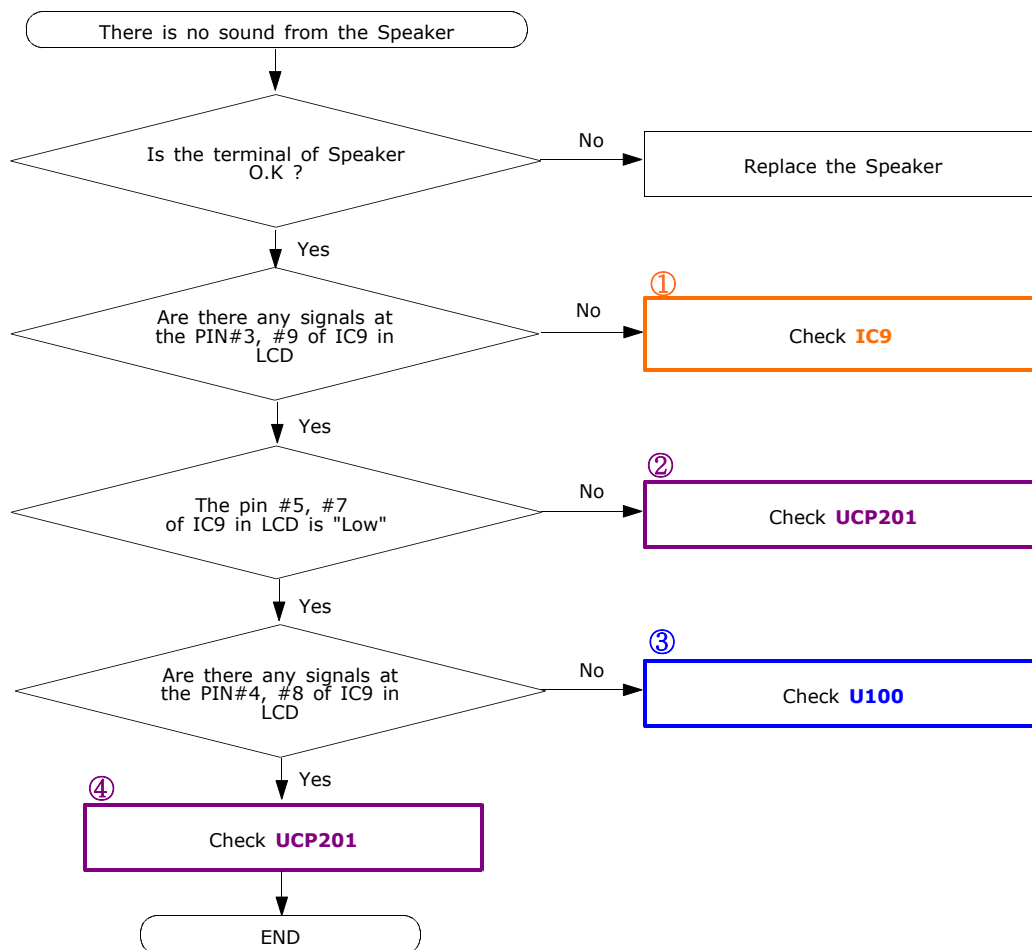




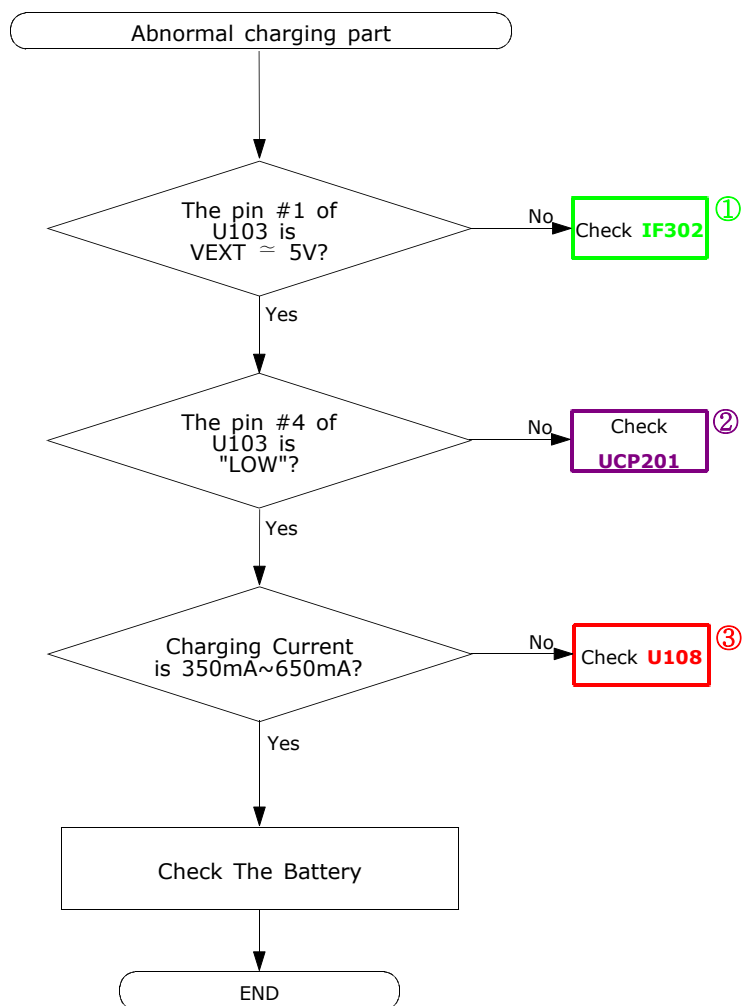


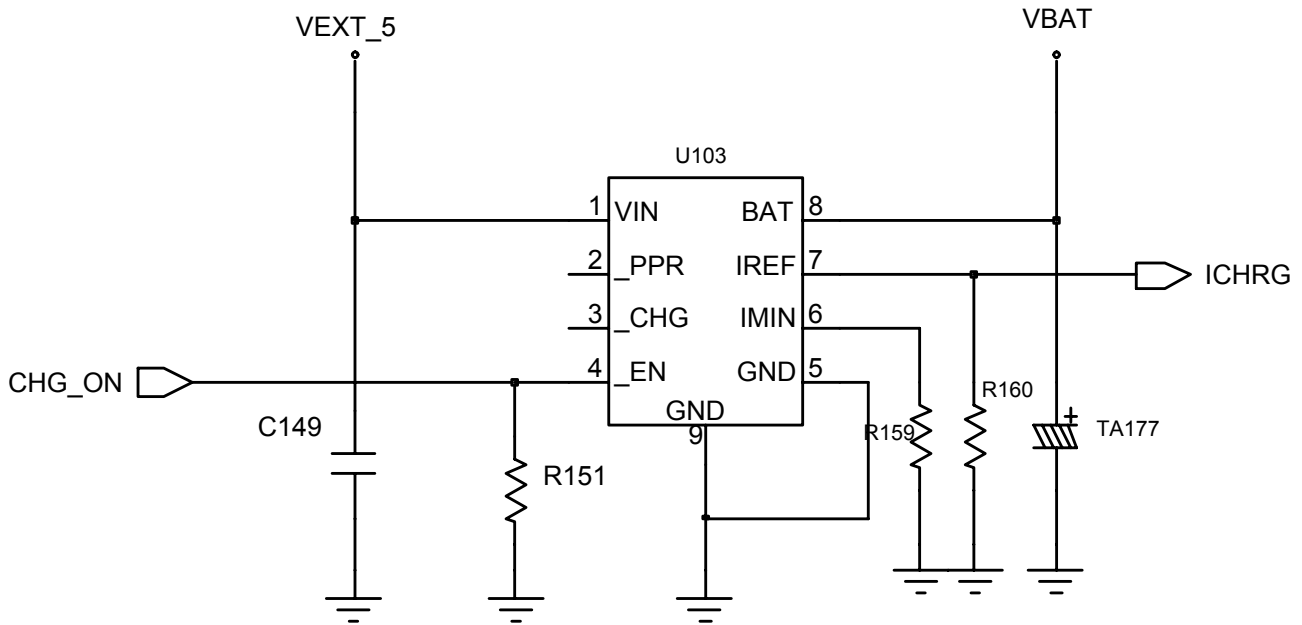
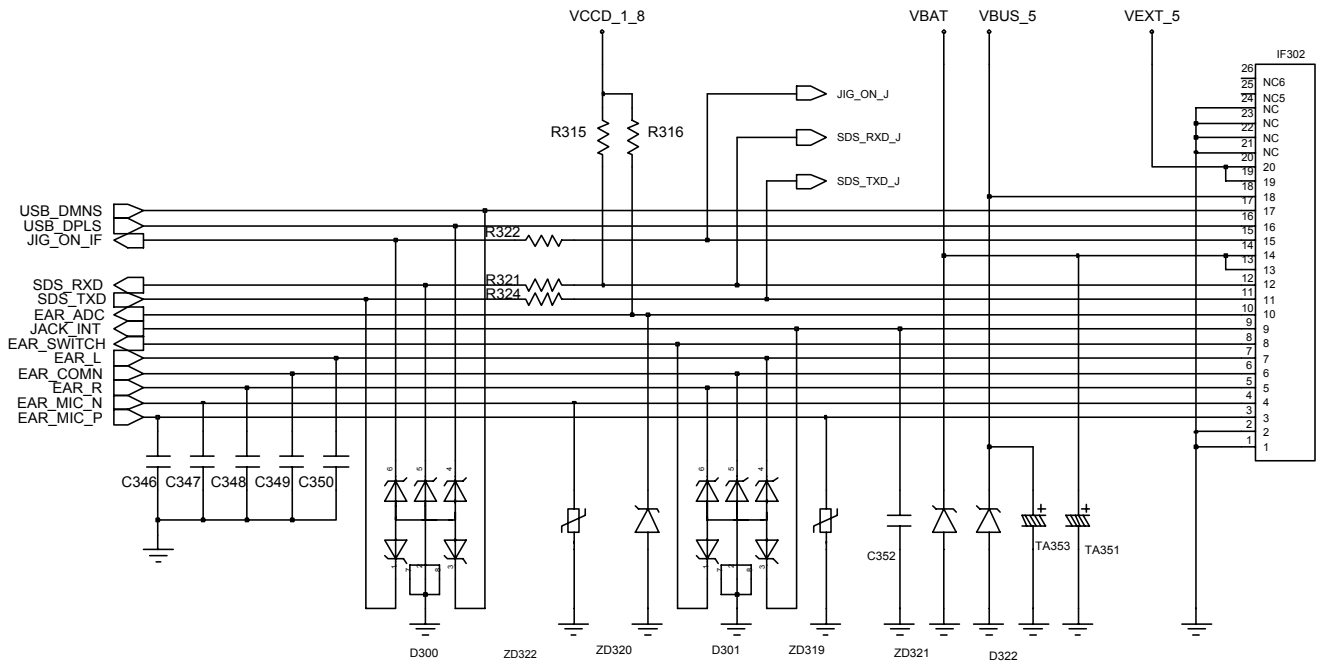


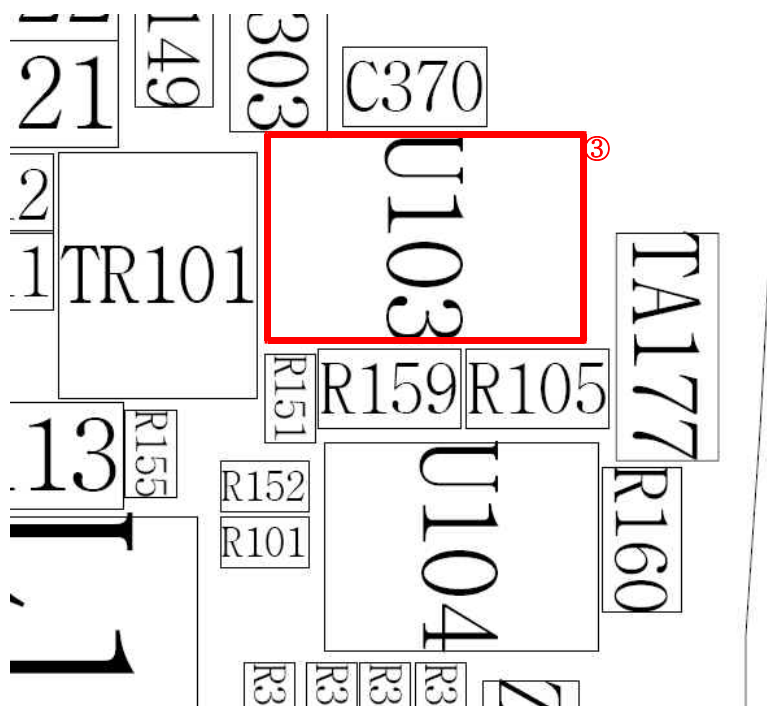
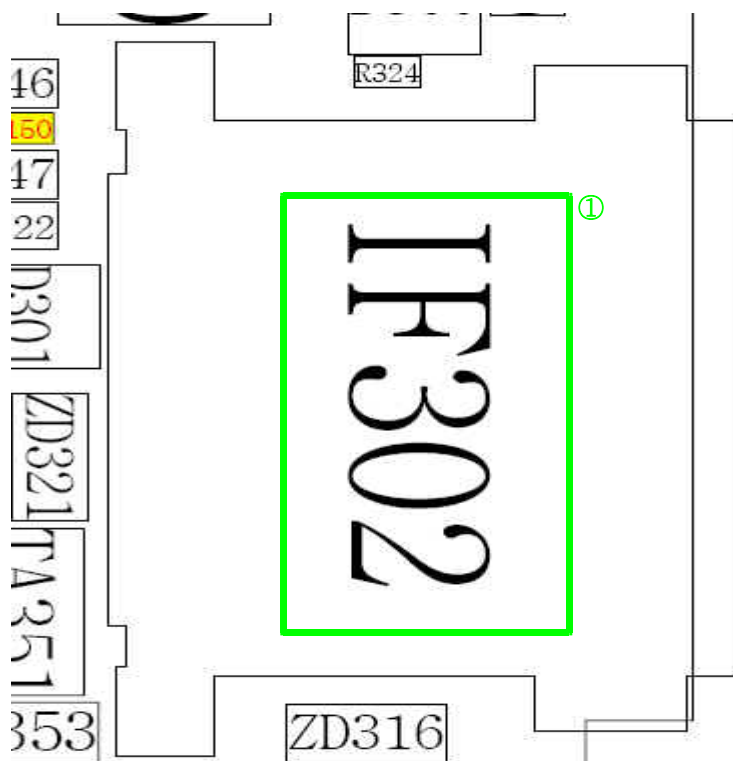
### 3-1-6. Speaker Part\_2(RECEIVER)



### 3-1-7. Charging Part

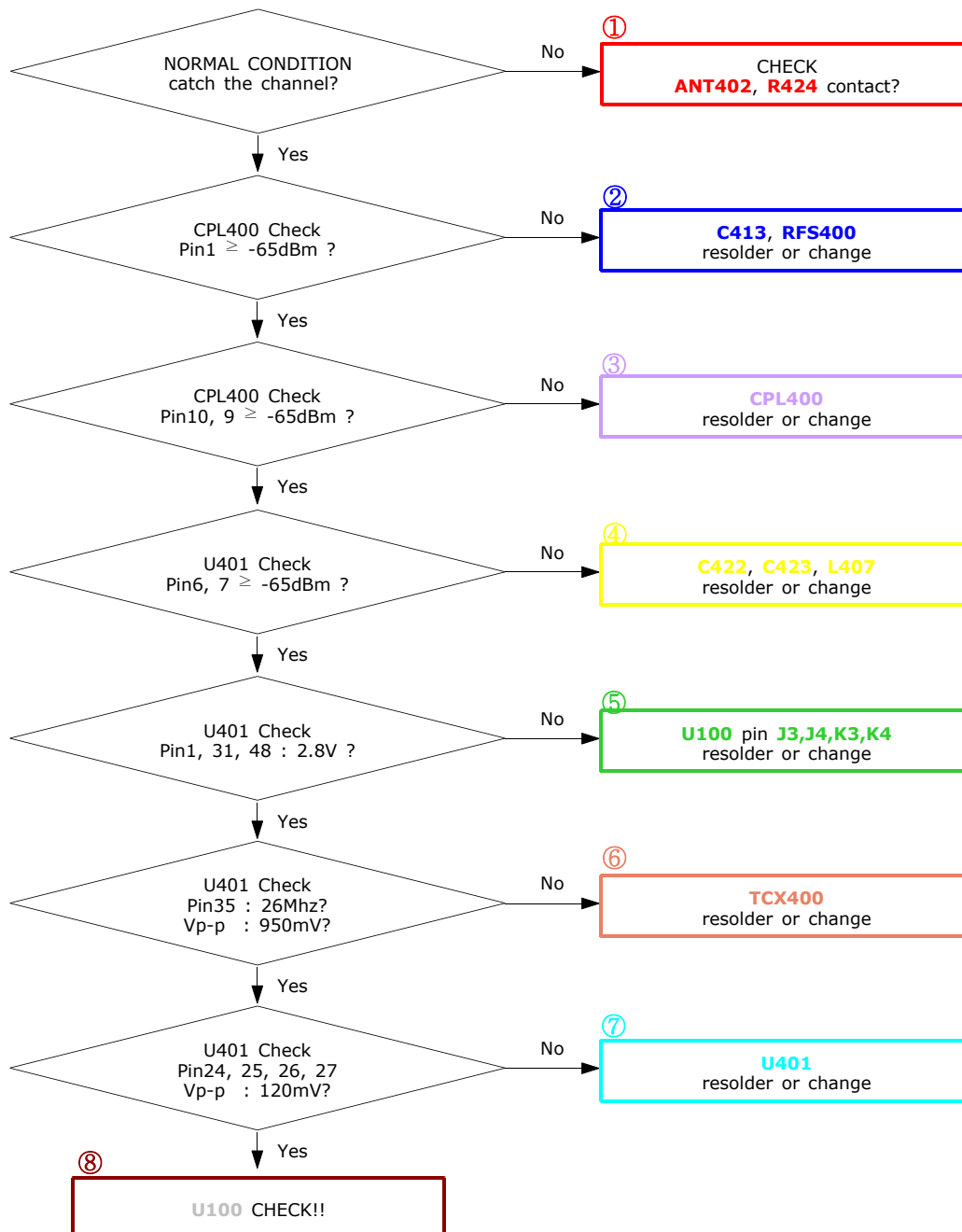


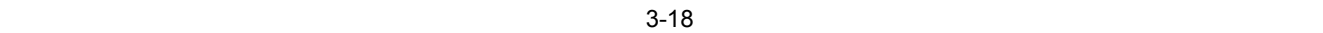




## 3-2. RF

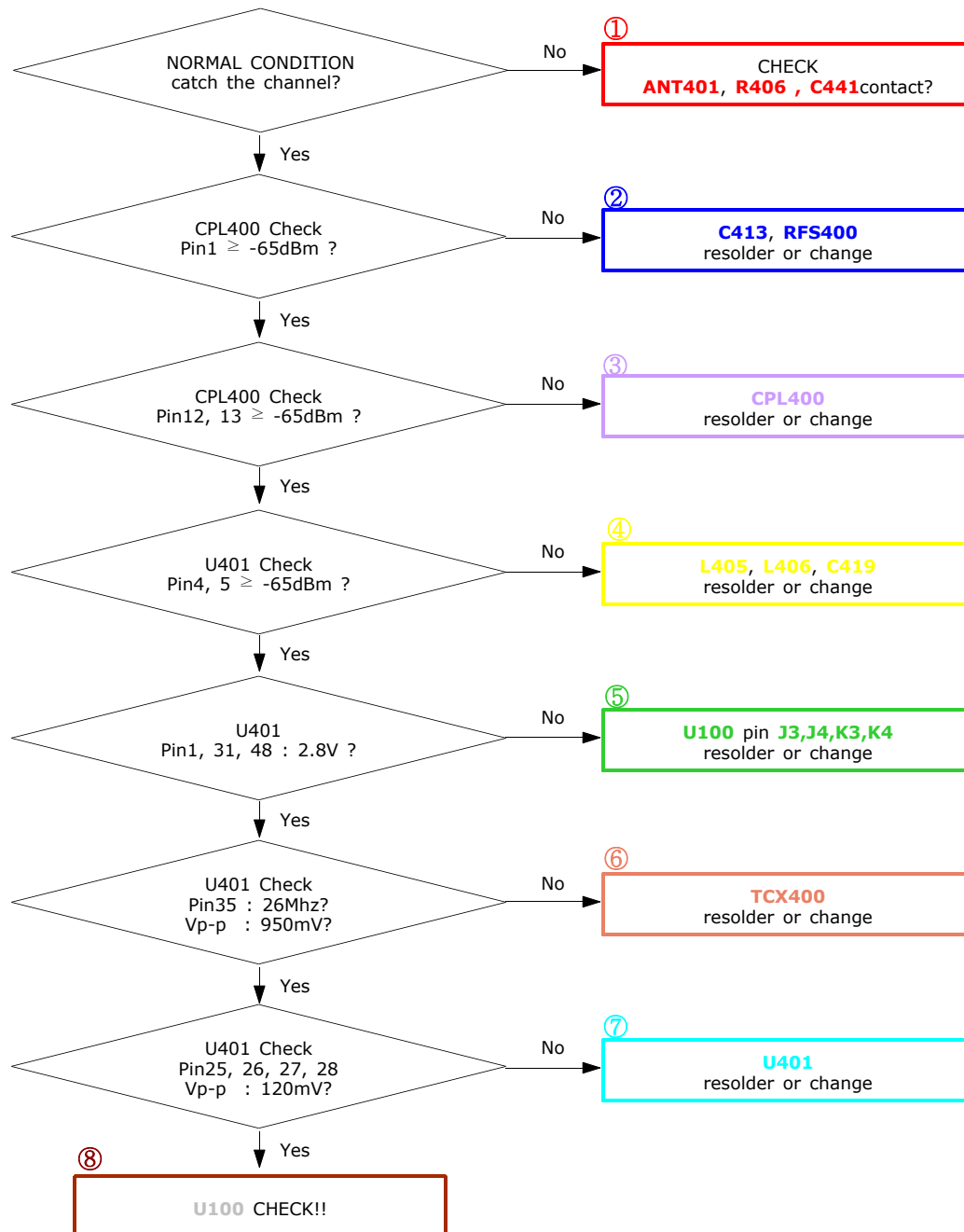
### 3-2-1. EGSM RX

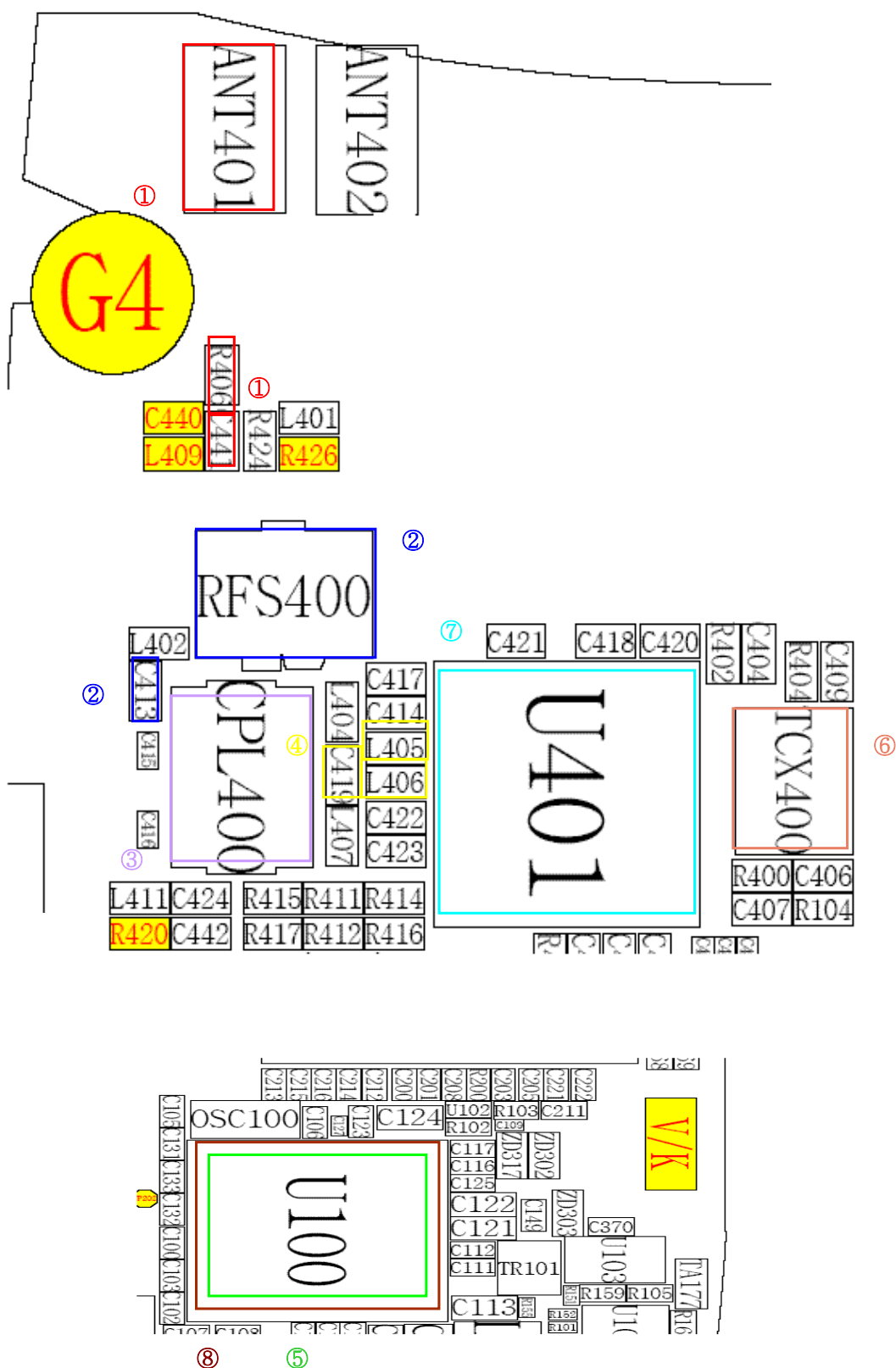




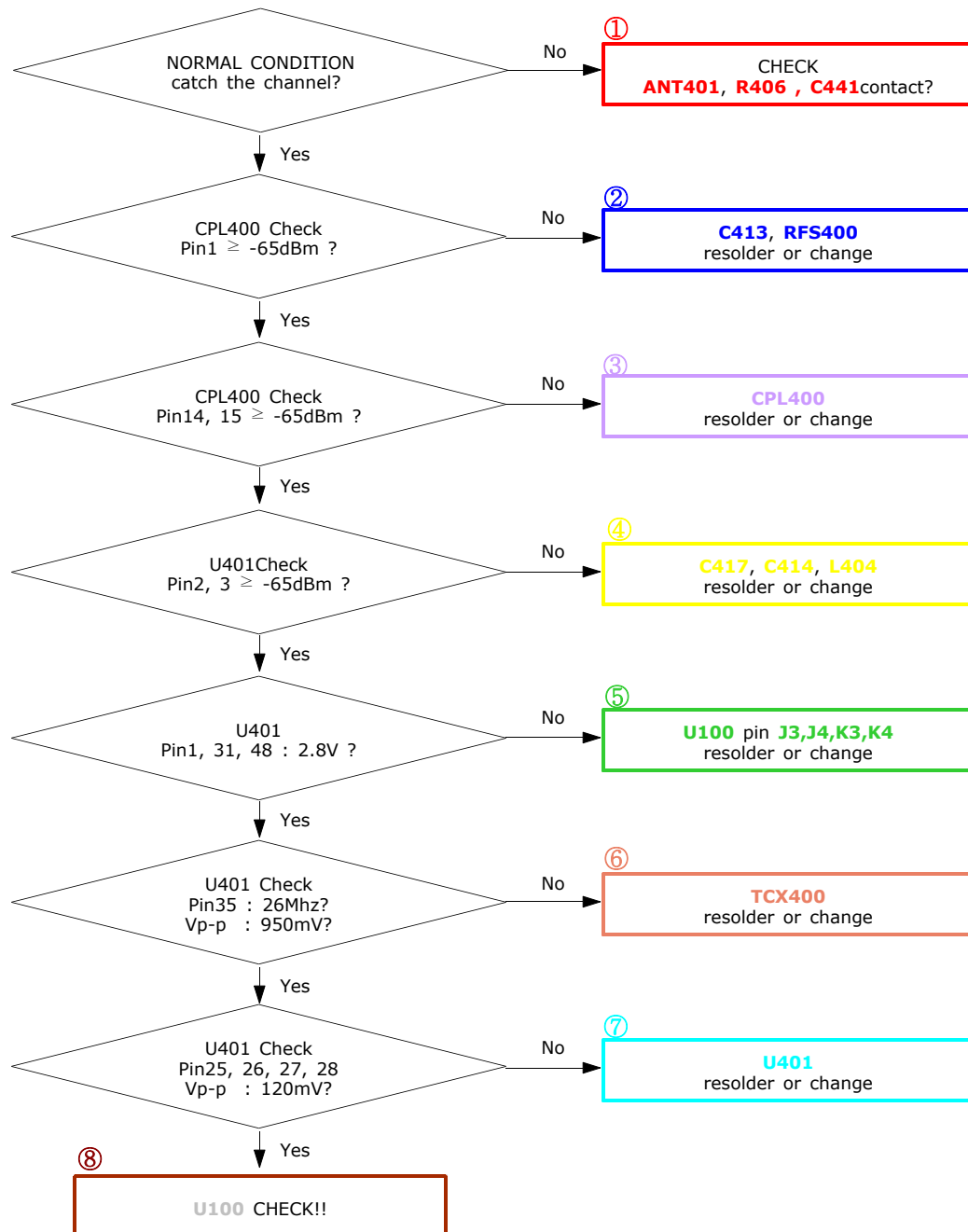


## 3-2-2. DCS RX

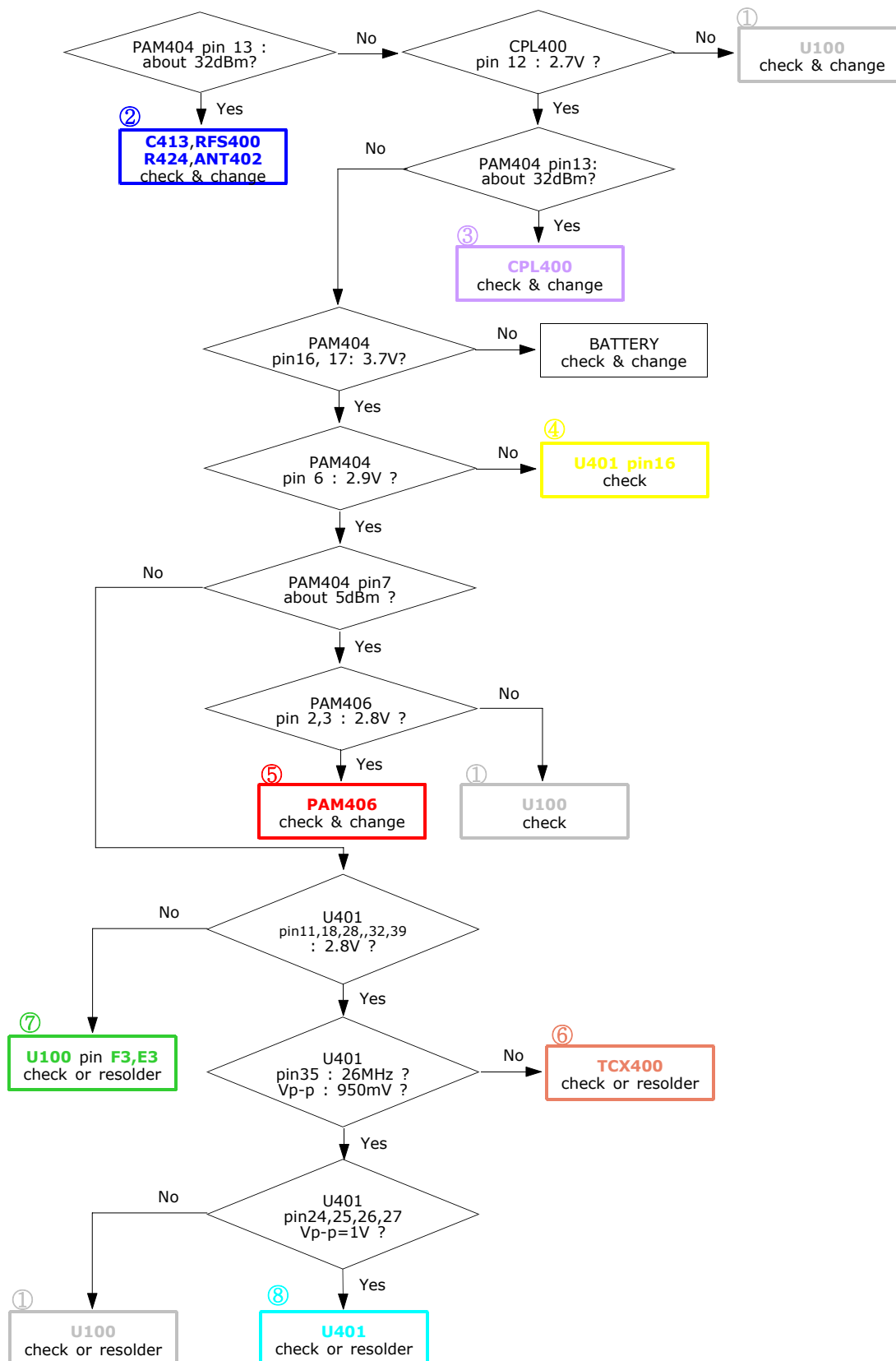




## 3-2-3. PCS RX

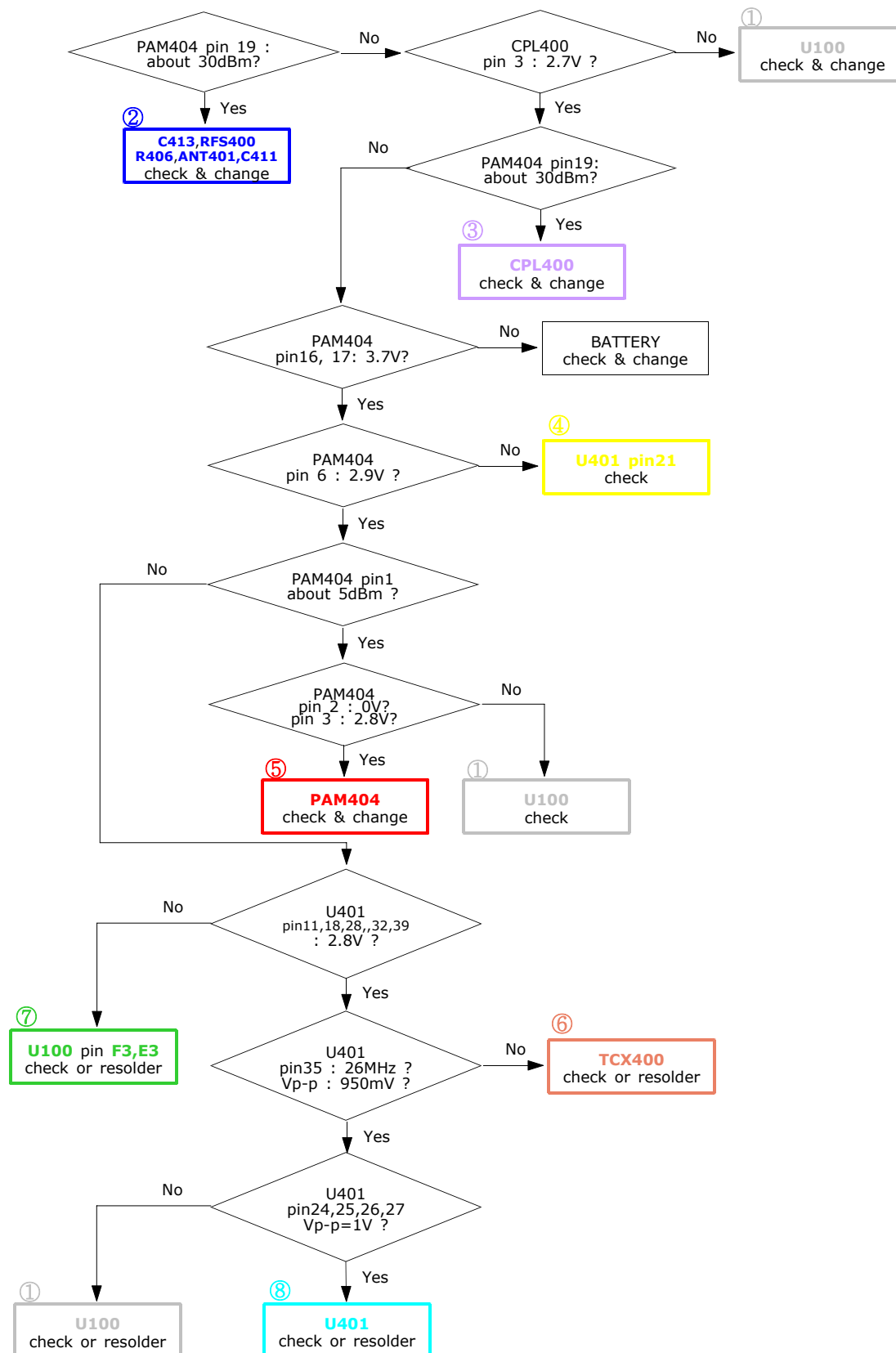


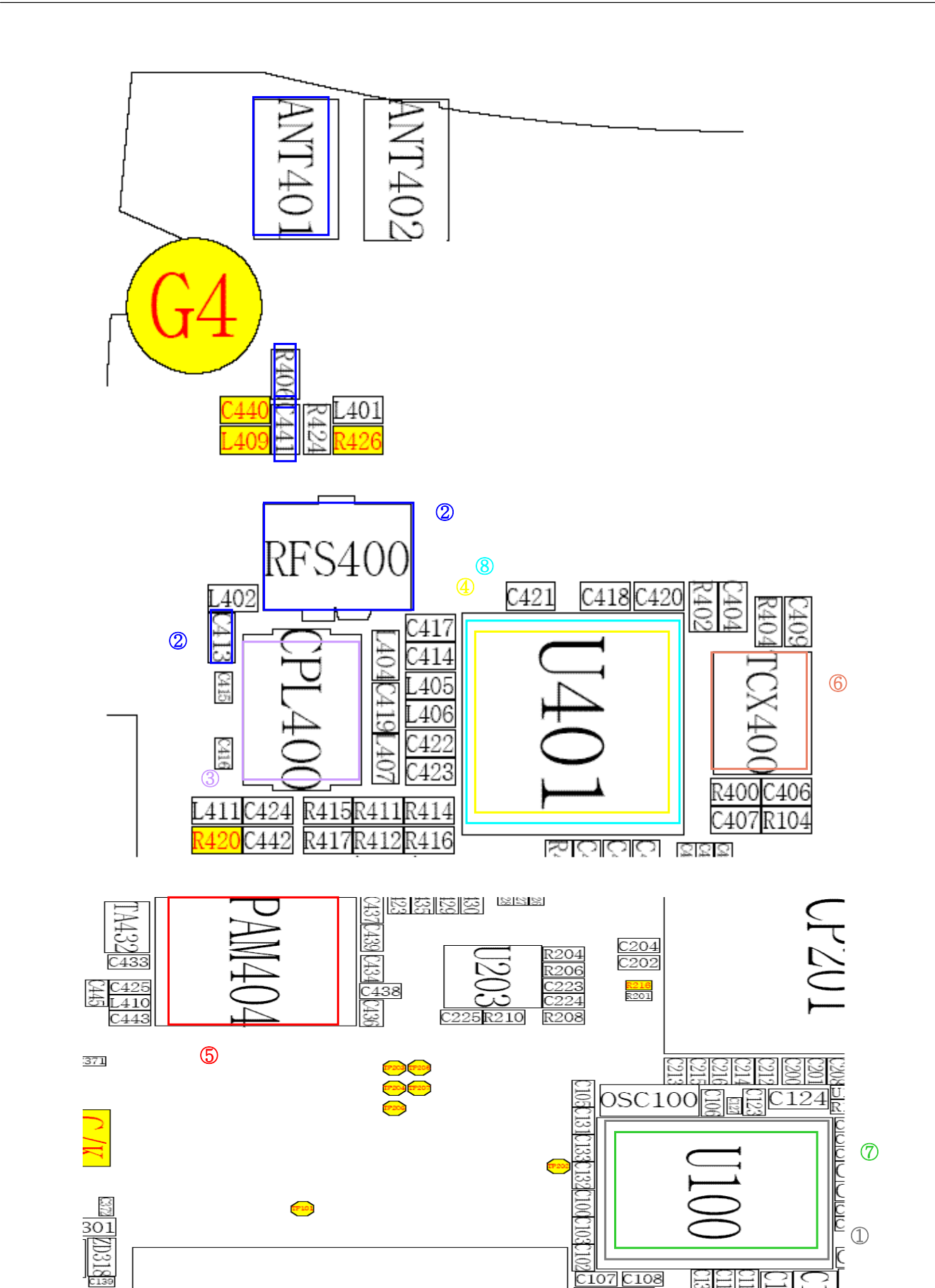
## 3-2-4. EGSM TX

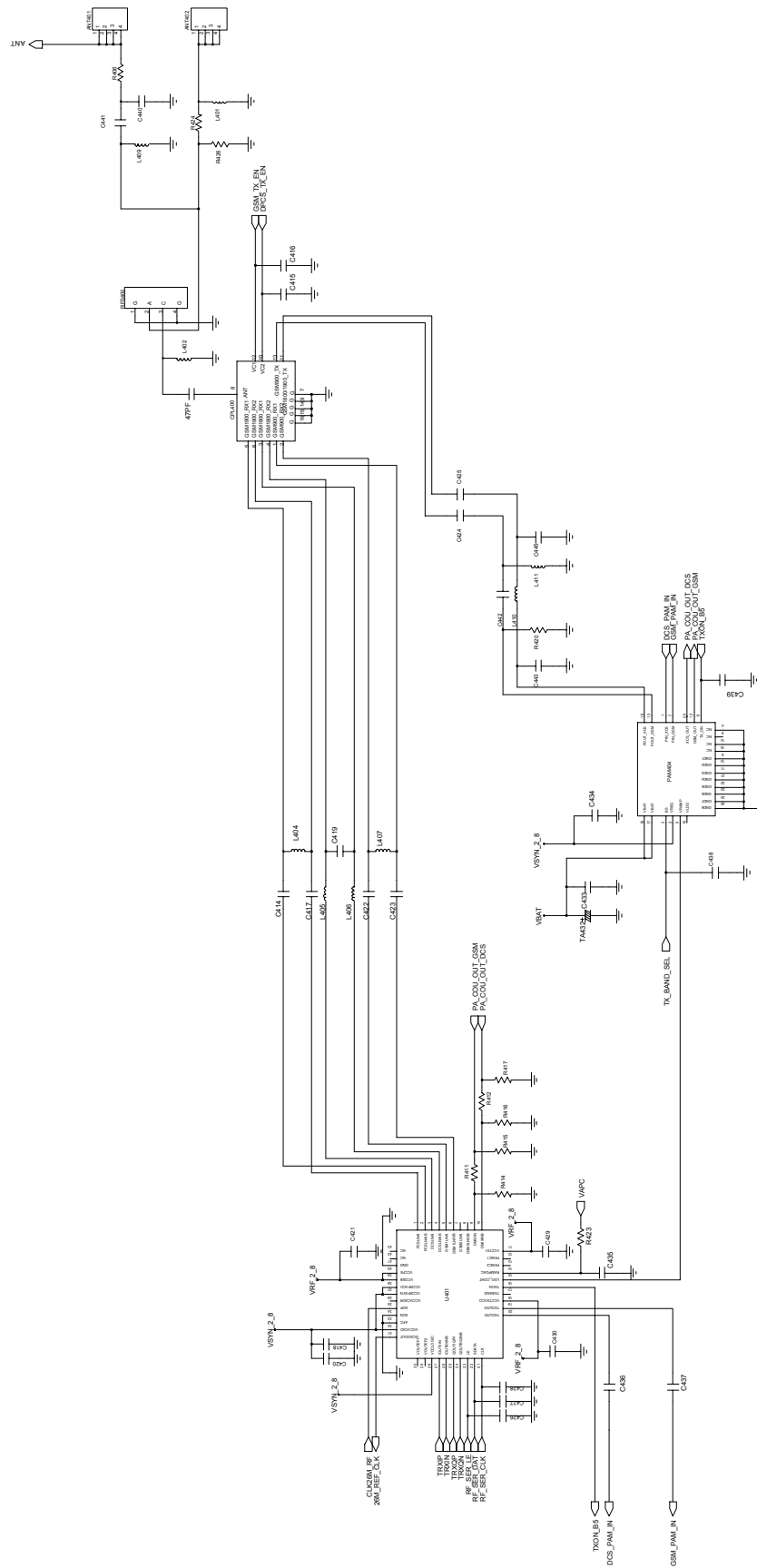




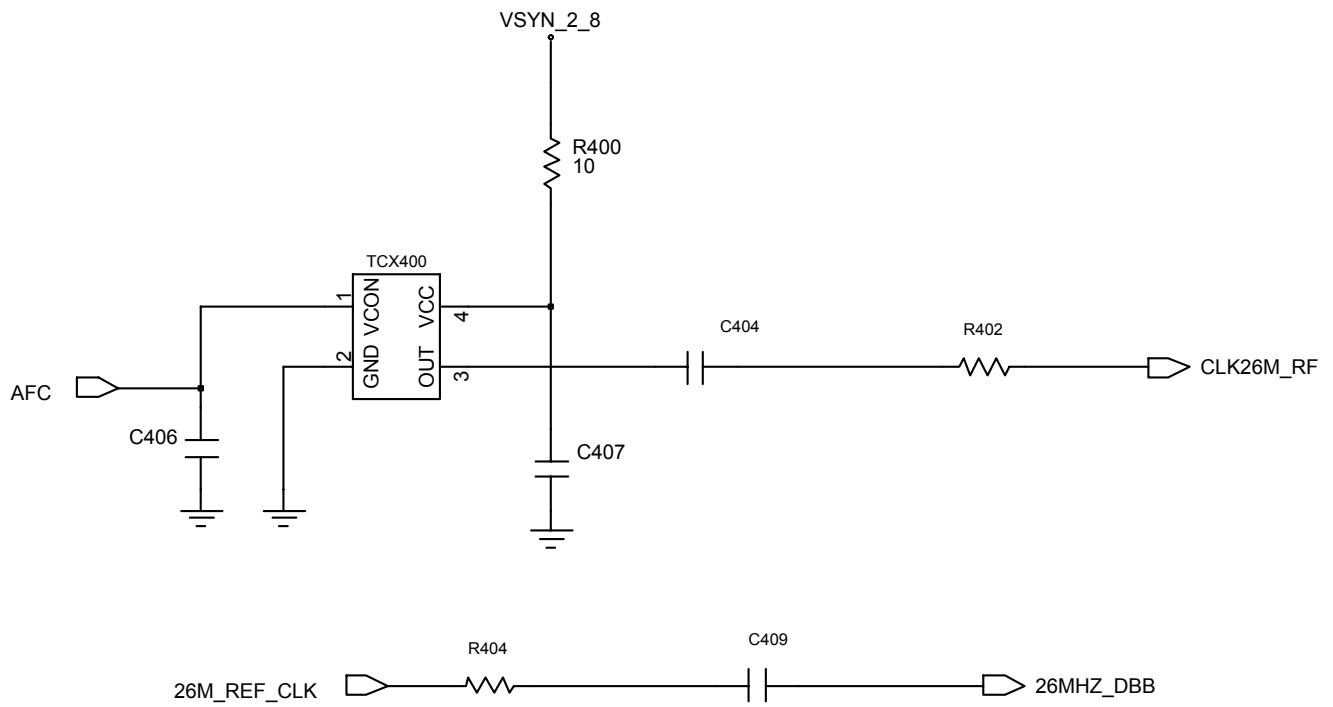
## 3-2-5. DCS/PCS TX











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## 4. Array course control

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- E790 DATA Cable and JTAG  
(You have to cut 'JTAG CABLE' for protecting confusion with data cable)



### Software Downloading

#### 4-1. Downloading Binary Files

- A binary file for downloading E790.
  - gsmstack.s3

#### 4-2. Pre-requisition for Downloading

- Downloader Program(Optiflash.exe) - Optiflash version 4.16 T1 S01
- E790 Mobile Phone
- Data Cable
- Binary file

### 4-3. S/W Downloader Program

- **Optiflash application**



## 4-4. How to Download

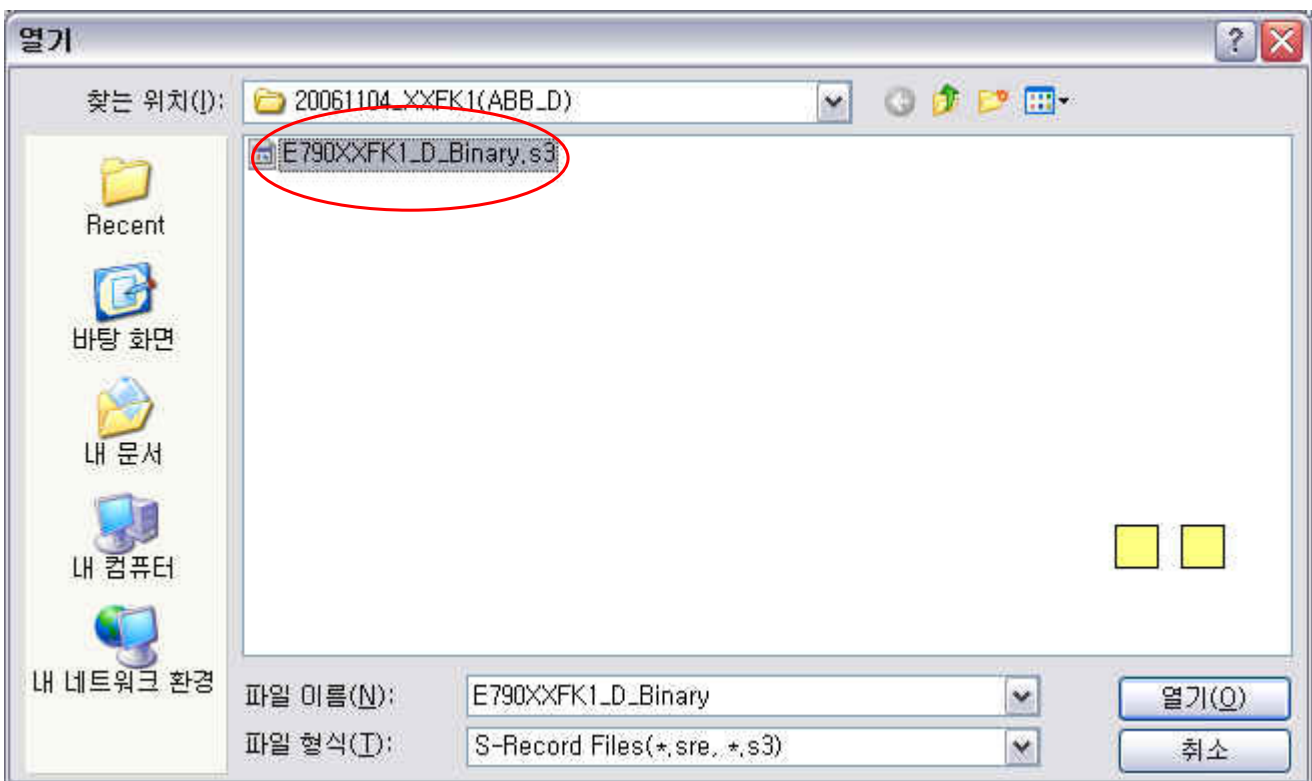
- ① **Connect the data cable and press '\*'(star)' key on the keypad simultaneously.**
- ② **Run **Optiflash application** (Optiflash.exe)**



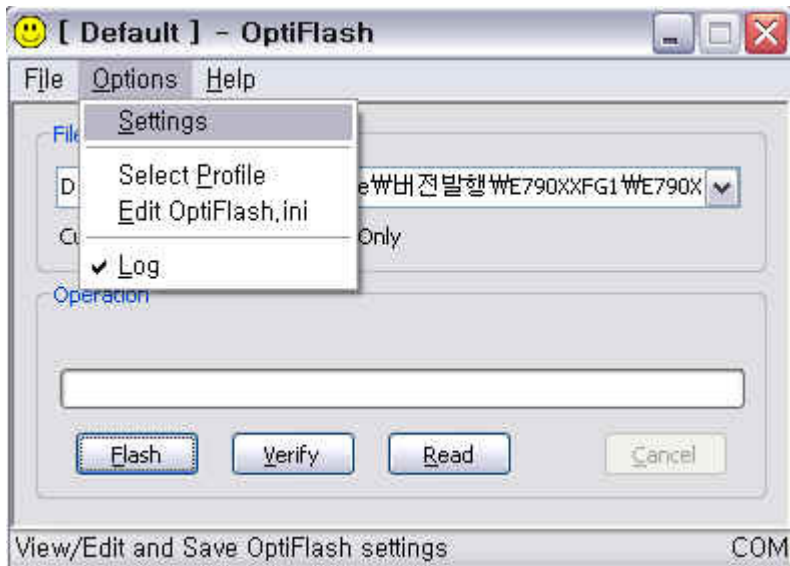
## ③ File open



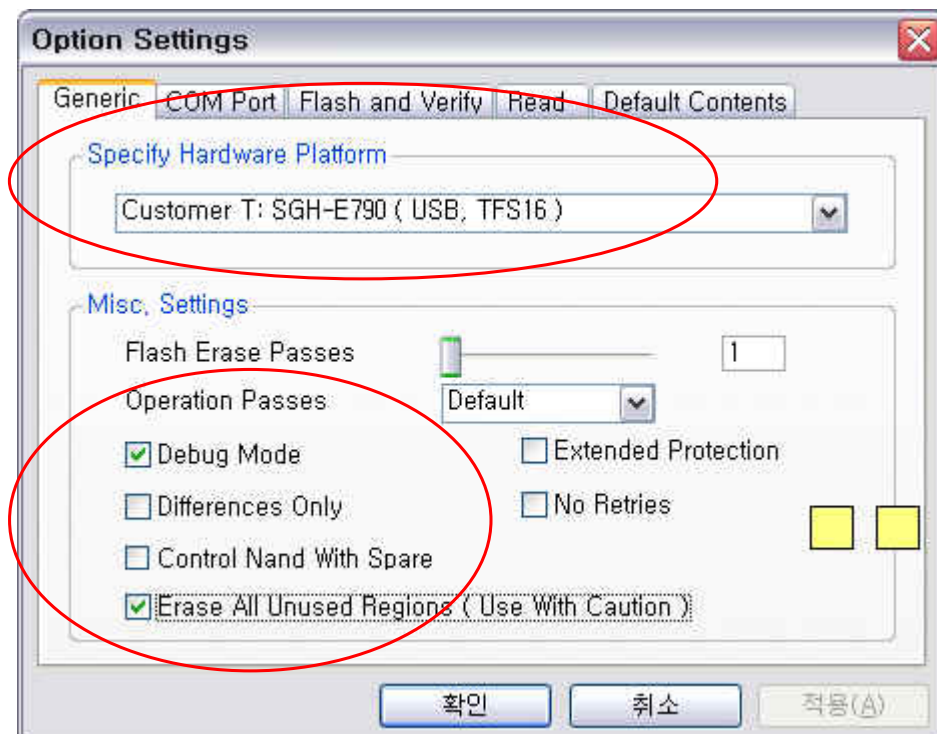
- Select an existing load file ( usually, gsmstack.s3 )



### ③ Option

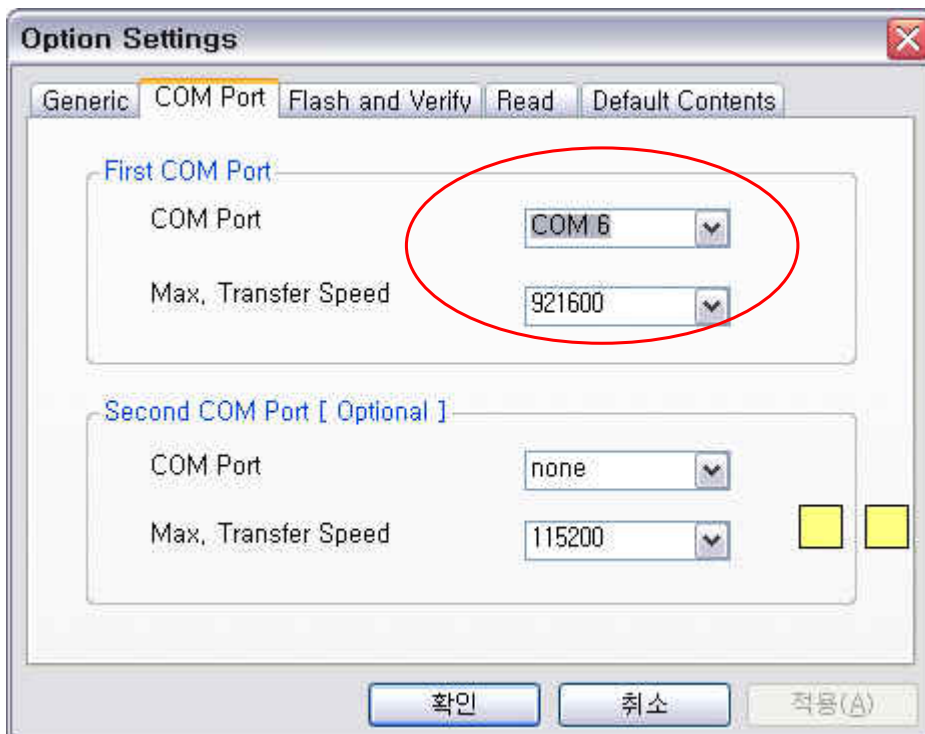


- Click '**Settings**' , Display as below.



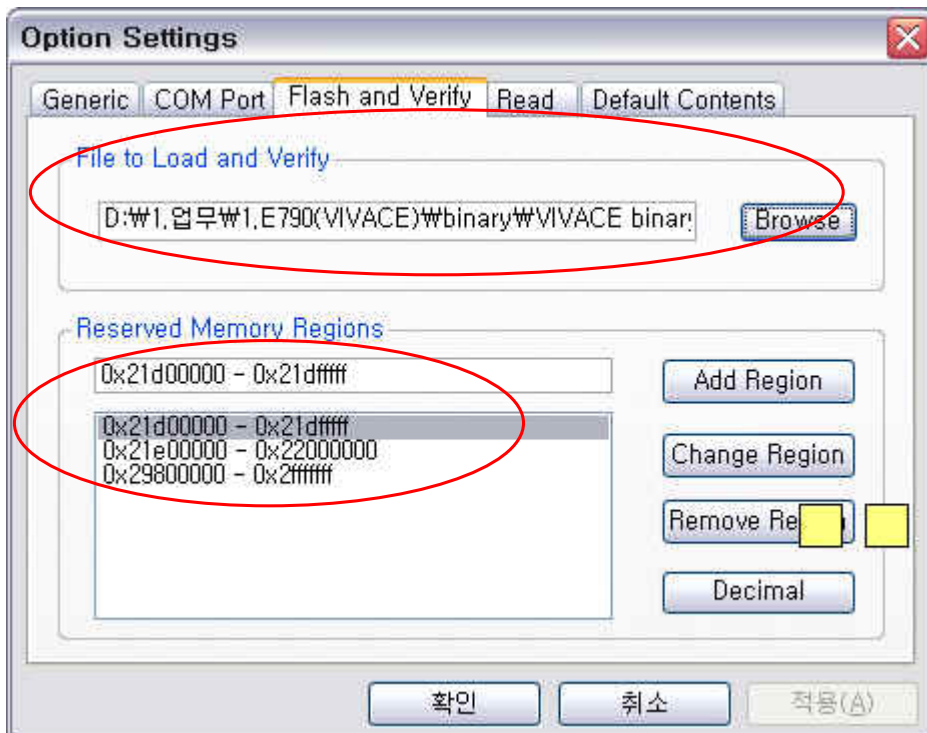
#### \* Generic

- Specify Hardware Platform: Select a **model and platform (USB)**
- Misc.Settings : Check the 'Debug Mode' and '**Erase All Unused Regions**'

**\* COM Port**

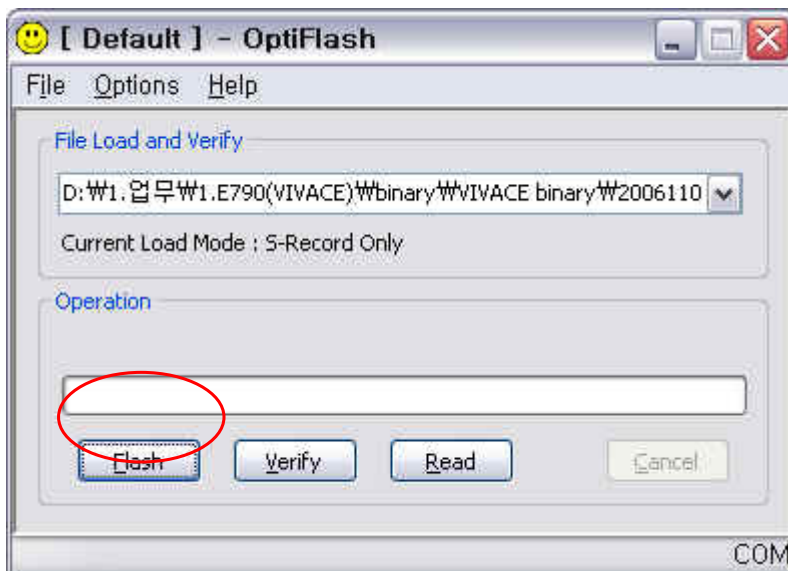
- Select com port
- if you don't know the usb port, please see the control pannel.  
(Device Manager – Hardware – Port)

## \* Flash and Verify



- Click 'Browse' button - **file to load and verify**
- **Check the reserved memory regions**

④ All procedures are done, Click '**Flash**' Button.



- ⑤ Pop up the window as below. Type the **"yes"** and Click **'OK'**

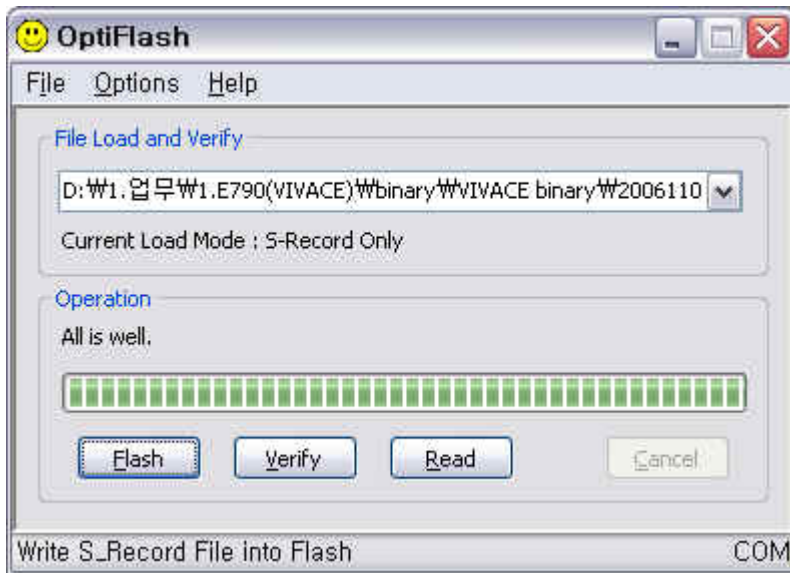


- ⑥ Start Download.
- Display status of downloading progress.



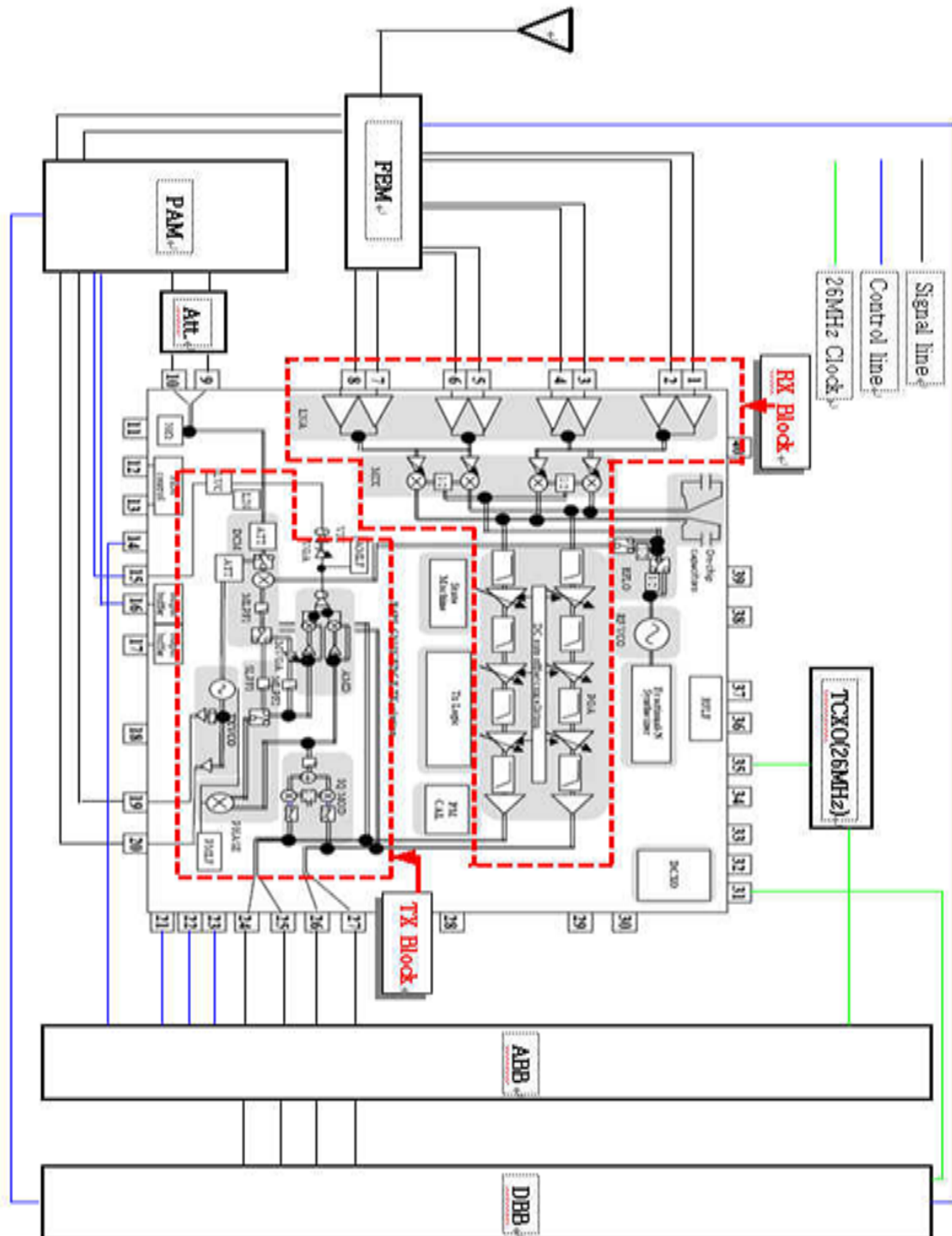


- ⑦ Display "All is well" and the E790 will reboot automatically.

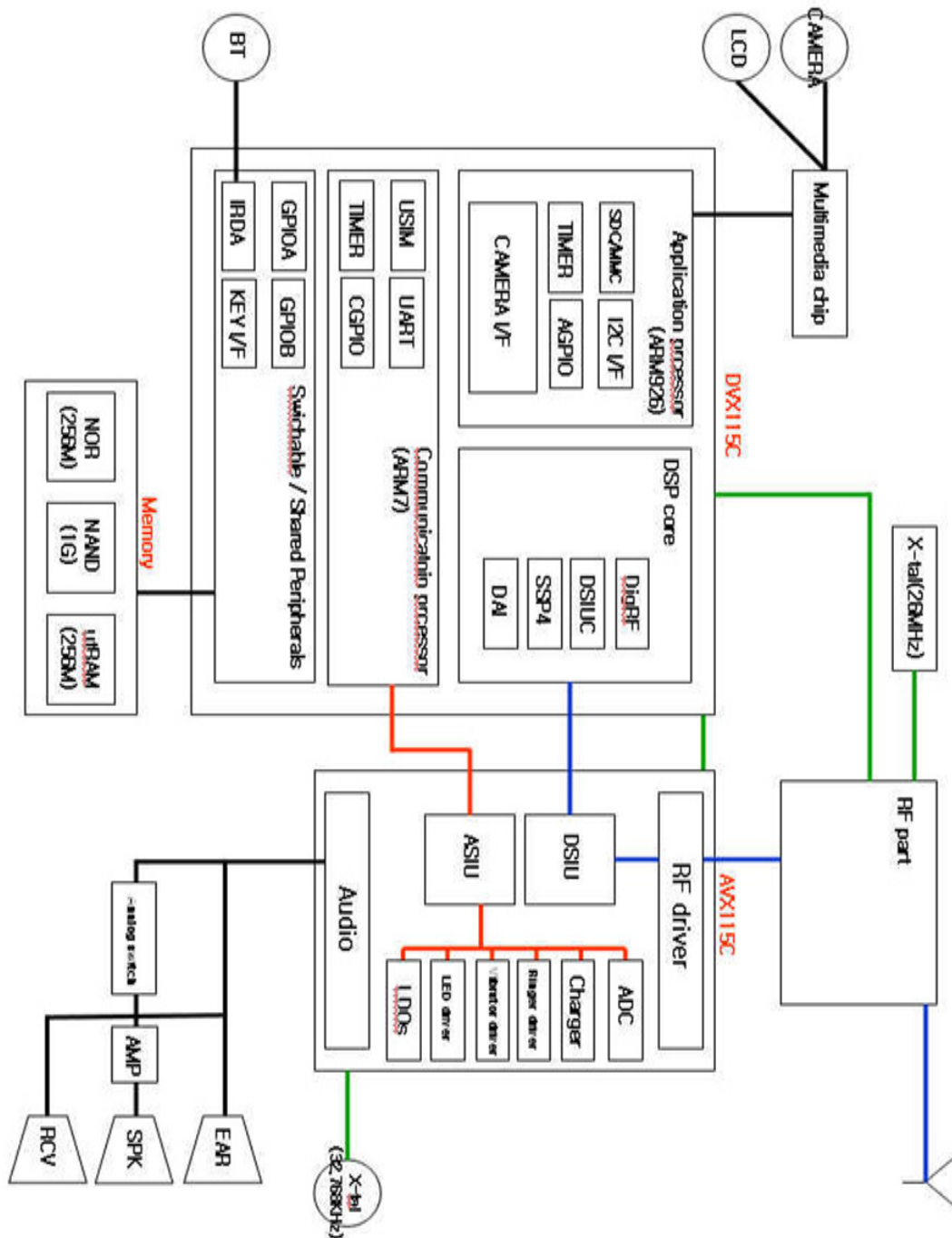


## 5. Block Diagrams

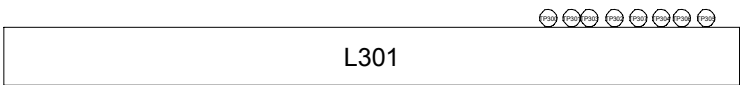
### 5-1. RF Solution Block Diagram

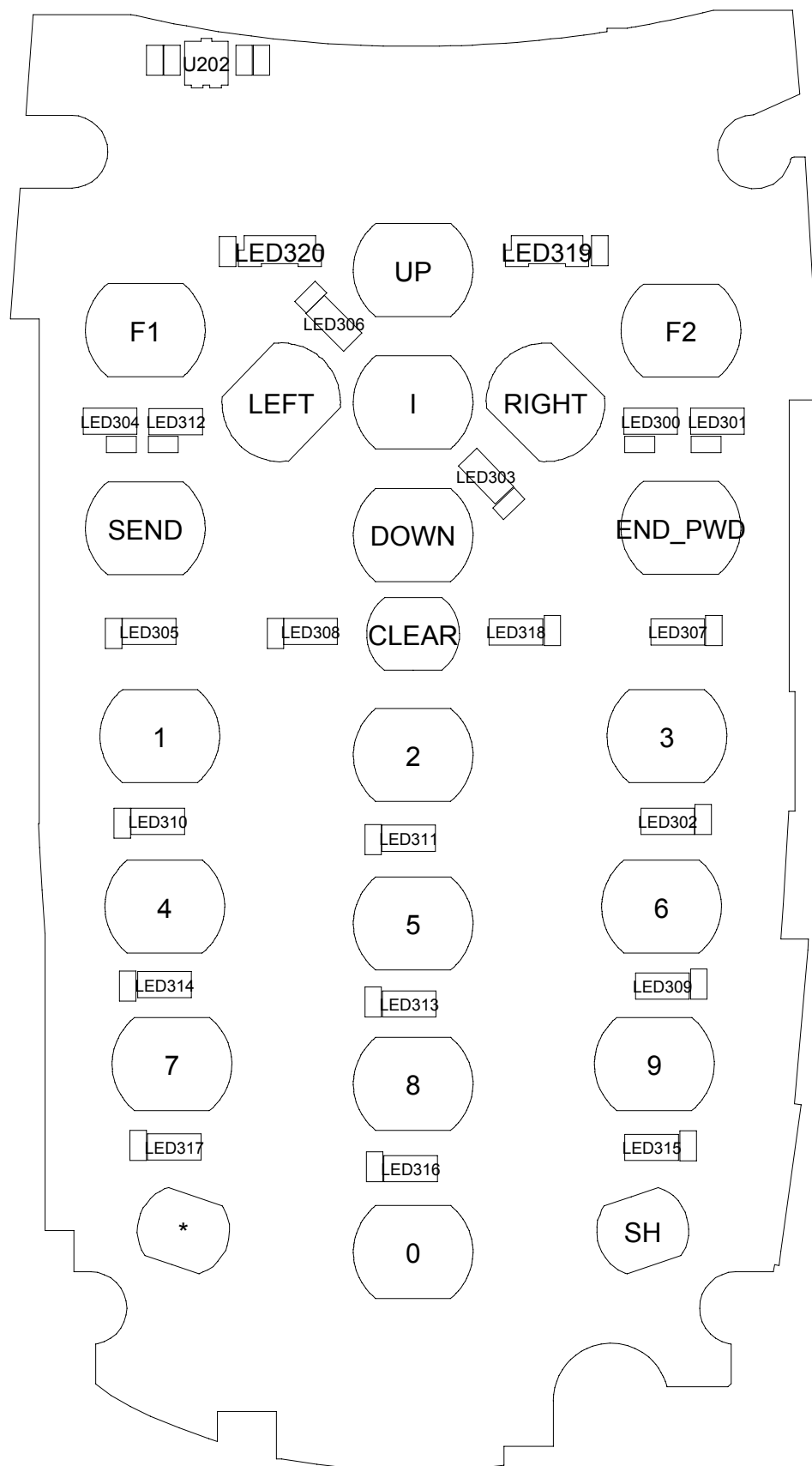


## 5-2. Base Band Solution Block Diagram



## 6. PCB Diagrams





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## 7. MAIN Electrical Parts List

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SEC CODE	Design LOC	Discription	STATUS
4202-001232	AN400	ANTENNA-CHIP	SA
GH71-06338A	ANT401	NPR-BRACKET ANT CONTACT	SA
GH71-06338A	ANT402	NPR-BRACKET ANT CONTACT	SA
4302-001130	BAT100	BATTERY-LI(2ND)	SA
3711-006249	BTC302	HEADER-BATTERY	SA
2203-006260	C100	C-CER,CHIP	SA
2203-006260	C102	C-CER,CHIP	SA
2203-006260	C103	C-CER,CHIP	SA
2203-003054	C105	C-CER,CHIP	SA
2203-003054	C106	C-CER,CHIP	SA
2203-006562	C107	C-CER,CHIP	SA
2203-006562	C108	C-CER,CHIP	SA
2203-006194	C109	C-CER,CHIP	SA
2203-006562	C111	C-CER,CHIP	SA
2203-000254	C112	C-CER,CHIP	SA
2203-006825	C113	C-CER,CHIP	SA
2203-006562	C115	C-CER,CHIP	SA
2203-006562	C116	C-CER,CHIP	SA
2203-006562	C117	C-CER,CHIP	SA
2203-006562	C118	C-CER,CHIP	SA
2203-006562	C119	C-CER,CHIP	SA
2203-006324	C120	C-CER,CHIP	SA
2203-006324	C121	C-CER,CHIP	SA
2203-006324	C122	C-CER,CHIP	SA
2203-006562	C123	C-CER,CHIP	SA
2203-006324	C124	C-CER,CHIP	SA
2203-006257	C125	C-CER,CHIP	SA
2203-006423	C127	C-CER,CHIP	SA
2203-006474	C128	C-CER,CHIP	SA
2203-002709	C130	C-CER,CHIP	SA
2203-000254	C131	C-CER,CHIP	SA
2203-000254	C132	C-CER,CHIP	SA
2203-000254	C133	C-CER,CHIP	SA
2203-005993	C134	C-CER,CHIP	SA
2203-006348	C135	C-CER,CHIP	SA
2203-006423	C136	C-CER,CHIP	SA
2203-000812	C137	C-CER,CHIP	SA
2203-005682	C138	C-CER,CHIP	SA
2203-005682	C139	C-CER,CHIP	SA

SEC CODE	Design LOC	Discription	STATUS
2203-005993	C141	C-CER,CHIP	SA
2203-000812	C142	C-CER,CHIP	SA
2203-000812	C143	C-CER,CHIP	SA
2203-006562	C144	C-CER,CHIP	SA
2203-005993	C148	C-CER,CHIP	SA
2203-006681	C149	C-CER,CHIP	SA
2203-005993	C152	C-CER,CHIP	SA
2203-006562	C153	C-CER,CHIP	SA
2203-001072	C200	C-CER,CHIP	SA
2203-006260	C201	C-CER,CHIP	SA
2203-006562	C202	C-CER,CHIP	SA
2203-006562	C203	C-CER,CHIP	SA
2203-006260	C204	C-CER,CHIP	SA
2203-006260	C205	C-CER,CHIP	SA
2203-006626	C206	C-CER,CHIP	SA
2203-006626	C207	C-CER,CHIP	SA
2203-000254	C208	C-CER,CHIP	SA
2203-006626	C209	C-CER,CHIP	SA
2203-006626	C210	C-CER,CHIP	SA
2203-006626	C211	C-CER,CHIP	SA
2203-006626	C212	C-CER,CHIP	SA
2203-002709	C213	C-CER,CHIP	SA
2203-000254	C214	C-CER,CHIP	SA
2203-002709	C215	C-CER,CHIP	SA
2203-000254	C216	C-CER,CHIP	SA
2203-006626	C217	C-CER,CHIP	SA
2203-006626	C218	C-CER,CHIP	SA
2203-002709	C219	C-CER,CHIP	SA
2203-002709	C220	C-CER,CHIP	SA
2203-006626	C221	C-CER,CHIP	SA
2203-006626	C222	C-CER,CHIP	SA
2203-006048	C223	C-CER,CHIP	SA
2203-006048	C224	C-CER,CHIP	SA
2203-006048	C225	C-CER,CHIP	SA
2203-002709	C226	C-CER,CHIP	SA
2203-006194	C227	C-CER,CHIP	SA
2203-000812	C228	C-CER,CHIP	SA
2203-005682	C300	C-CER,CHIP	SA
2203-005683	C301	C-CER,CHIP	SA

SEC CODE	Design LOC	Discription	STATUS
2203-005725	C302	C-CER,CHIP	SA
2203-005725	C303	C-CER,CHIP	SA
2203-005682	C304	C-CER,CHIP	SA
2203-005725	C305	C-CER,CHIP	SA
2203-005683	C306	C-CER,CHIP	SA
2203-005682	C307	C-CER,CHIP	SA
2203-005682	C308	C-CER,CHIP	SA
2203-005682	C309	C-CER,CHIP	SA
2203-005682	C310	C-CER,CHIP	SA
2203-005682	C311	C-CER,CHIP	SA
2203-005682	C312	C-CER,CHIP	SA
2203-005682	C313	C-CER,CHIP	SA
2203-005682	C314	C-CER,CHIP	SA
2203-005682	C315	C-CER,CHIP	SA
2203-005682	C316	C-CER,CHIP	SA
2203-005682	C317	C-CER,CHIP	SA
2203-005682	C318	C-CER,CHIP	SA
2203-005682	C319	C-CER,CHIP	SA
2203-005682	C320	C-CER,CHIP	SA
2203-005682	C321	C-CER,CHIP	SA
2203-005682	C322	C-CER,CHIP	SA
2203-005682	C323	C-CER,CHIP	SA
2203-005682	C324	C-CER,CHIP	SA
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2203-005682	C333	C-CER,CHIP	SA
2203-005682	C334	C-CER,CHIP	SA
2203-005682	C335	C-CER,CHIP	SA
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2203-005682	C338	C-CER,CHIP	SA
2203-005682	C339	C-CER,CHIP	SA
2203-005682	C340	C-CER,CHIP	SA



SEC CODE	Design LOC	Discription	STATUS
2203-005682	C341	C-CER,CHIP	SA
2203-005682	C342	C-CER,CHIP	SA
2203-005725	C343	C-CER,CHIP	SA
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2203-000812	C346	C-CER,CHIP	SA
2203-000812	C347	C-CER,CHIP	SA
2203-005725	C348	C-CER,CHIP	SA
2203-005725	C349	C-CER,CHIP	SA
2203-005725	C350	C-CER,CHIP	SA
2203-006648	C352	C-CER,CHIP	SA
2203-002709	C355	C-CER,CHIP	SA
2203-000812	C356	C-CER,CHIP	SA
2203-006194	C357	C-CER,CHIP	SA
2203-000386	C358	C-CER,CHIP	SA
2203-000386	C359	C-CER,CHIP	SA
2203-006562	C360	C-CER,CHIP	SA
2203-006562	C361	C-CER,CHIP	SA
2203-006562	C362	C-CER,CHIP	SA
2203-006423	C363	C-CER,CHIP	SA
2203-006048	C364	C-CER,CHIP	SA
2203-006562	C365	C-CER,CHIP	SA
2203-006423	C366	C-CER,CHIP	SA
2203-000233	C367	C-CER,CHIP	SA
2203-000233	C368	C-CER,CHIP	SA
2203-000233	C369	C-CER,CHIP	SA
2203-000233	C370	C-CER,CHIP	SA
2203-005736	C371	C-CER,CHIP	SA
2203-005736	C372	C-CER,CHIP	SA
2203-006423	C400	C-CER,CHIP	SA
2203-005808	C401	C-CER,CHIP	SA
2203-005808	C402	C-CER,CHIP	SA
2203-005808	C403	C-CER,CHIP	SA
2203-000254	C404	C-CER,CHIP	SA
2203-005729	C405	C-CER,CHIP	SA
2203-000254	C406	C-CER,CHIP	SA
2203-000254	C407	C-CER,CHIP	SA
2203-000233	C409	C-CER,CHIP	SA
2203-005792	C410	C-CER,CHIP	SA
2203-006305	C411	C-CER,CHIP	SA

SEC CODE	Design LOC	Discription	STATUS
2203-006674	C412	C-CER,CHIP	SNA
2203-000995	C413	C-CER,CHIP	SA
2203-000696	C414	C-CER,CHIP	SA
2203-005682	C415	C-CER,CHIP	SA
2203-005682	C416	C-CER,CHIP	SA
2203-000696	C417	C-CER,CHIP	SA
2203-002709	C418	C-CER,CHIP	SA
2203-002668	C419	C-CER,CHIP	SA
2203-002709	C420	C-CER,CHIP	SA
2203-002709	C421	C-CER,CHIP	SA
2203-000679	C422	C-CER,CHIP	SA
2203-000679	C423	C-CER,CHIP	SA
2203-000812	C424	C-CER,CHIP	SA
2203-000812	C425	C-CER,CHIP	SA
2203-005682	C426	C-CER,CHIP	SA
2203-005682	C427	C-CER,CHIP	SA
2203-005682	C428	C-CER,CHIP	SA
2203-002709	C429	C-CER,CHIP	SA
2203-002709	C430	C-CER,CHIP	SA
2203-000254	C433	C-CER,CHIP	SA
2203-000254	C434	C-CER,CHIP	SA
2203-000138	C435	C-CER,CHIP	SA
2203-000812	C436	C-CER,CHIP	SA
2203-000812	C437	C-CER,CHIP	SA
2203-000233	C438	C-CER,CHIP	SA
2203-000627	C439	C-CER,CHIP	SNA
2203-005053	C441	C-CER,CHIP	SA
2203-005057	C442	C-CER,CHIP	SA
2203-005234	C443	C-CER,CHIP	SA
3709-001344	CD305	CONNECTOR-CARD EDGE	SA
2911-000058	CPL400	DUPLEXER-FEM	SA
0406-001190	D300	DIODE-TVS	SA
0406-001190	D301	DIODE-TVS	SA
0406-001201	D322	DIODE-TVS	SA
2909-001283	DUF400	FILTER-LC	SA
3711-005937	HDC301	HEADER-BOARD TO BOARD	SA
3710-002442	IF302	SOCKET-INTERFACE	SA
2703-002346	L100	INDUCTOR-SMD	SA
3301-001729	L101	BEAD-SMD	SA

SEC CODE	Design LOC	Discription	STATUS
3301-001342	L200	BEAD-SMD	SA
2703-001990	L400	INDUCTOR-SMD	SA
2703-001748	L401	INDUCTOR-SMD	SA
2703-001752	L402	INDUCTOR-SMD	SA
2703-001747	L404	INDUCTOR-SMD	SA
2703-001750	L405	INDUCTOR-SMD	SA
2703-001750	L406	INDUCTOR-SMD	SA
2703-001180	L407	INDUCTOR-SMD	SA
2703-002176	L410	INDUCTOR-SMD	SA
2703-002199	L411	INDUCTOR-SMD	SA
0601-002272	LED300	LED	SA
0601-002272	LED301	LED	SA
0601-002272	LED302	LED	SA
0601-002272	LED303	LED	SA
0601-002272	LED304	LED	SA
0601-002272	LED305	LED	SA
0601-002272	LED306	LED	SA
0601-002272	LED307	LED	SA
0601-002272	LED308	LED	SA
0601-002272	LED309	LED	SA
0601-002272	LED310	LED	SA
0601-002272	LED311	LED	SA
0601-002272	LED312	LED	SA
0601-002272	LED313	LED	SA
0601-002272	LED314	LED	SA
0601-002272	LED315	LED	SA
0601-002272	LED316	LED	SA
0601-002272	LED317	LED	SA
0601-002272	LED318	LED	SA
2801-004339	OSC100	CRYSTAL-SMD	SA
2801-004358	OSC301	CRYSTAL-SMD	SA
2801-004560	OSC302	CRYSTAL-SMD	SA
1201-002338	PAM404	IC-POWER AMP	SA
2007-008483	R101	R-CHIP	SA
2007-000775	R102	R-CHIP	SA
2007-000982	R103	R-CHIP	SA
2007-000148	R104	R-CHIP	SA
2007-000171	R105	R-CHIP	SA
2007-000144	R107	R-CHIP	SA

SEC CODE	Design LOC	Discription	STATUS
2007-008531	R111	R-CHIP	SA
2007-008531	R112	R-CHIP	SA
2007-000153	R113	R-CHIP	SA
2007-007528	R114	R-CHIP	SA
2007-007528	R116	R-CHIP	SA
2007-008544	R117	R-CHIP	SA
2007-007528	R118	R-CHIP	SA
2007-000153	R119	R-CHIP	SA
2007-007528	R120	R-CHIP	SA
2007-000172	R121	R-CHIP	SA
2007-000172	R122	R-CHIP	SA
2007-000171	R123	R-CHIP	SA
2007-008055	R126	R-CHIP	SA
2007-000171	R128	R-CHIP	SA
2007-008542	R129	R-CHIP	SA
2007-008542	R130	R-CHIP	SA
2007-008816	R151	R-CHIP	SA
2007-009168	R152	R-CHIP	SA
2007-008419	R155	R-CHIP	SA
2007-003014	R159	R-CHIP	SA
2007-000153	R160	R-CHIP	SA
2007-003015	R200	R-CHIP	SA
2007-008052	R201	R-CHIP	SA
2007-000162	R202	R-CHIP	SA
2007-000147	R204	R-CHIP	SA
2007-000139	R205	R-CHIP	SA
2007-000242	R206	R-CHIP	SA
2007-001292	R208	R-CHIP	SA
2007-001292	R210	R-CHIP	SA
2007-008816	R213	R-CHIP	SA
2007-008816	R214	R-CHIP	SA
2007-000162	R220	R-CHIP	SA
2007-008052	R221	R-CHIP	SA
2007-008055	R223	R-CHIP	SA
2007-000145	R224	R-CHIP	SA
2007-000172	R300	R-CHIP	SA
2007-000172	R301	R-CHIP	SA
2007-000172	R302	R-CHIP	SA
2007-000172	R303	R-CHIP	SA

SEC CODE	Design LOC	Discription	STATUS
2007-000172	R304	R-CHIP	SA
2007-000172	R305	R-CHIP	SA
2007-000172	R306	R-CHIP	SA
2007-000172	R307	R-CHIP	SA
2007-000172	R308	R-CHIP	SA
2007-000172	R309	R-CHIP	SA
2007-000172	R310	R-CHIP	SA
2007-000172	R311	R-CHIP	SA
2007-000172	R312	R-CHIP	SA
2007-000172	R313	R-CHIP	SA
2007-000172	R314	R-CHIP	SA
2007-008055	R315	R-CHIP	SA
2007-008055	R316	R-CHIP	SA
2007-000172	R317	R-CHIP	SA
2007-000172	R318	R-CHIP	SA
2007-000172	R319	R-CHIP	SA
2007-000172	R320	R-CHIP	SA
2007-008419	R321	R-CHIP	SA
2007-008419	R322	R-CHIP	SA
2007-008419	R324	R-CHIP	SA
2007-000168	R325	R-CHIP	SA
2007-000171	R327	R-CHIP	SA
2007-009115	R329	R-CHIP	SA
2007-008531	R330	R-CHIP	SA
2007-008055	R331	R-CHIP	SA
2007-009084	R332	R-CHIP	SA
2007-000171	R335	R-CHIP	SA
2007-000172	R400	R-CHIP	SA
2007-008774	R401	R-CHIP	SA
2007-000138	R402	R-CHIP	SA
2007-008483	R403	R-CHIP	SA
2007-000171	R404	R-CHIP	SA
2007-000171	R405	R-CHIP	SA
2007-000171	R406	R-CHIP	SA
2007-001301	R411	R-CHIP	SA
2007-001301	R412	R-CHIP	SA
2007-000138	R414	R-CHIP	SA
2007-000138	R415	R-CHIP	SA
2007-000138	R416	R-CHIP	SA

SEC CODE	Design LOC	Discription	STATUS
2007-000138	R417	R-CHIP	SA
2007-000171	R418	R-CHIP	SA
2007-007318	R423	R-CHIP	SA
2007-000171	R424	R-CHIP	SA
3705-001421	RFS400	CONNECTOR-COAXIAL	SA
3709-001400	SIM102	CONNECTOR-CARD EDGE	SA
2404-001352	TA149	C-TA,CHIP	SA
2404-001478	TA151	C-TA,CHIP	SA
2404-001225	TA154	C-TA,CHIP	SA
2404-001478	TA155	C-TA,CHIP	SA
2404-001225	TA156	C-TA,CHIP	SA
2404-001381	TA177	C-TA,CHIP	SA
2404-001474	TA351	C-TA,CHIP	SA
2404-001381	TA353	C-TA,CHIP	SA
2404-001474	TA354	C-TA,CHIP	SA
2404-001474	TA432	C-TA,CHIP	SA
2809-001287	TCX400	OSCILLATOR-VCTCXO	SA
0504-000168	TR101	TR-DIGITAL	SA
1203-004404	U100	IC-POWER SUPERVISOR	SA
1001-001405	U101	IC-ANALOG MULTIPLEX	SA
1404-001165	U102	THERMISTOR-NTC	SA
1203-003663	U103	IC-BATTERY	SA
0801-002529	U104	IC-CMOS LOGIC	SA
1009-001023	U202	IC-HALL EFFECT S/W	SA
1205-002272	U203	IC-TRANSCEIVER	SA
0801-003031	U303	IC-CMOS LOGIC	SA
1205-003086	U401	IC-TRANSCEIVER	SA
1205-003064	U402	IC-DATA COMM./GEN.	SA
GH13-00032A	UCD301	IC ASIC	SA
1108-000082	UCP201	IC-MCP	SA
1205-003100	UCP201	IC-DATA COMM./GEN.	SA
1405-001082	ZD100	VARISTOR	SA
1405-001082	ZD101	VARISTOR	SA
0406-001201	ZD300	DIODE-TVS	SA
0406-001201	ZD301	DIODE-TVS	SA
0406-001201	ZD302	DIODE-TVS	SA
0406-001201	ZD303	DIODE-TVS	SA
0406-001201	ZD304	DIODE-TVS	SA
0406-001201	ZD305	DIODE-TVS	SA

SEC CODE	Design LOC	Discription	STATUS
0406-001201	ZD307	DIODE-TVS	SA
0406-001201	ZD310	DIODE-TVS	SA
0406-001200	ZD311	DIODE-TVS	SA
0406-001201	ZD313	DIODE-TVS	SA
0406-001201	ZD316	DIODE-TVS	SA
0406-001201	ZD317	DIODE-TVS	SA
0406-001201	ZD318	DIODE-TVS	SA
1405-001082	ZD319	VARISTOR	SA
0406-001201	ZD320	DIODE-TVS	SA
0406-001201	ZD321	DIODE-TVS	SA
1405-001082	ZD322	VARISTOR	SA

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## 8. Reference data

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### 8-1. Reference Abbreviate

**AAC:** Advanced Audio Coding.

**AVC :** Advanced Video Coding.

**BER :** Bit Error Rate

**BPSK:** Binary Phase Shift Keying

**CA :** Conditional Access

**CDM :** Code Division Multiplexing

**C/I :** Carrier to Interference

**DMB :** Digital Multimedia Broadcasting

**EN :** European Standard

**ES :** Elementary Stream

**ETSI:** European Telecommunications Standards Institute

**MPEG:** Moving Picture Experts Group

**PN :** Pseudo-random Noise

**PS :** Pilot Symbol

**QPSK:** Quadrature Phase Shift Keying

**RS :** Reed-Solomon

**SI :** Service Information

**TDM :** Time Division Multiplexing

**TS :** Transport Stream



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## 9. Safety Precautions

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### 9-1. Repair Precaution

- Repair in Shield Box, during detailed tuning.  
Take specially care of tuning or test,  
because specipcty of cellular phone is sensitive for surrounding interference(RF noise).
- Be careful to use a kind of magnetic object or tool,  
because performance of parts is damaged by the influence of manetic force.
- Surely use a standard screwdriver when you disassemble this product,  
otherwise screw will be worn away.
- Use a thicken twisted wire when you measure level.  
A thicken twisted wire has low resistance, therefore error of measurement is few.
- Repair after separate Test Pack and Set because for short danger (for example an  
overcurrent and furious flames of parts etc) when you repair board in condition of  
connecting Test Pack and tuning on.
- Take specially care of soldering, because Land of PCB is small and weak in heat.
- Surely tune on/off while using AC power plug, because a repair of battery charger is  
dangerous when tuning ON/OFF PBA and Connector after disassembling charger.
- Don't use as you pleases after change other material than replacement registered on SEC  
System.  
Otherwise engineer in charge isn't charged with problem that you don't keep this rules.

## 9-2. ESD(Electrostatically Sensitive Devices) Precaution

Several semiconductor may be damaged easily by static electricity. Such parts are called by ESD(Electrostatically Sensitive Devices), for example IC,BGA chip etc. Read Precaution below. You can prevent from ESD damage by static electricity.

- Remove static electricity remained your body before you touch semiconductor or parts with semiconductor. There are ways that you touch an earthed place or wear static electricity prevention string on wrist.
- Use earthed soldering steel when you connect or disconnect ESD.
- Use soldering removing tool to break static electricity. , otherwise ESD will be damaged by static electricity.
- Don't unpack until you set up ESD on product. Because most of ESD are packed by box and aluminum plate to have conductive power,they are prevented from static electricity.
- You must maintain electric contact between ESD and place due to be set up until ESD is connected completely to the proper place or a circuit board.

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## 10. Product Function

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### Main Function

- Camera and camcorder
- Music player
- Image editor
- Offline mode
- Bluetooth
- Web browser
- Email
- Multimedia Message Service(MMS)
- SOS message

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